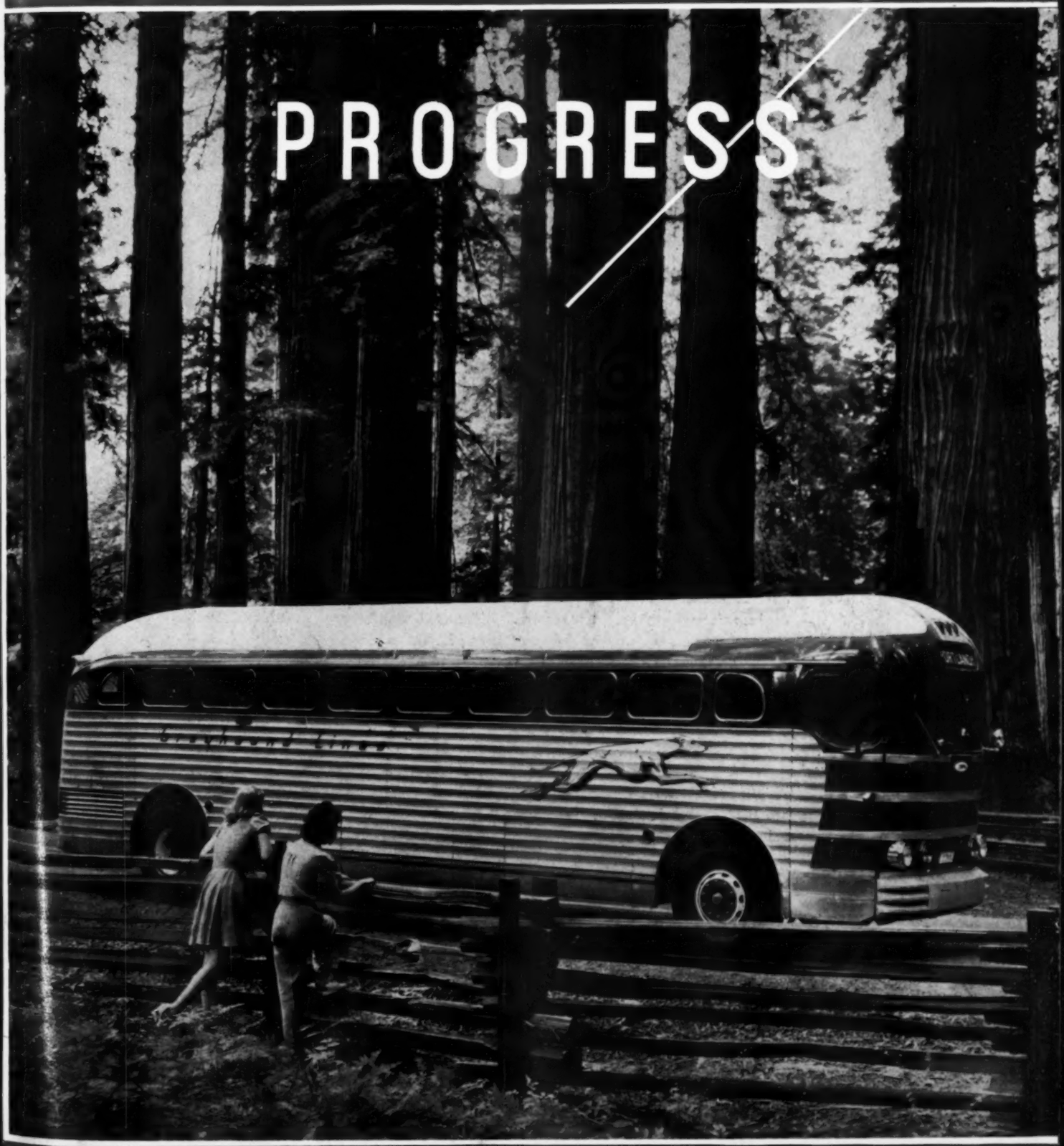
DIESEL



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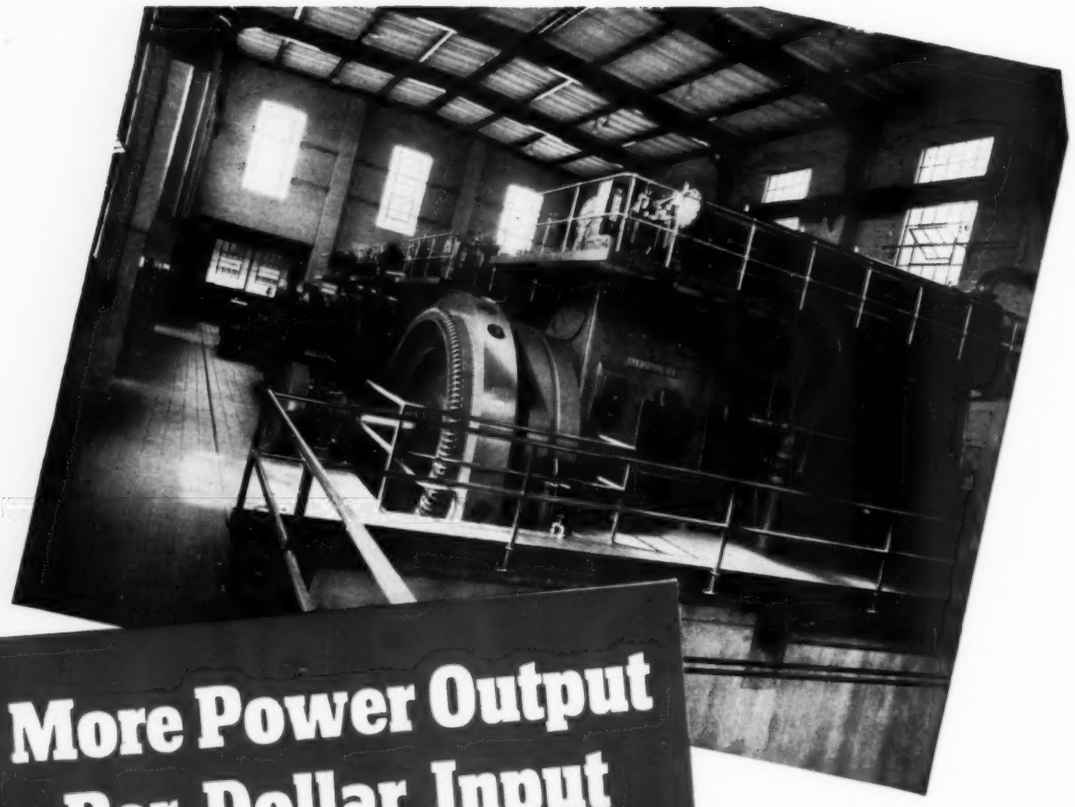

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DIESEL PROGRESS, for March, 1946. Volume XII, Number 3. DIESEL PROGRESS is published monthly by Diesel Engines, Inc., 2 W. Forty-fifth St., New York 19, N. Y. Rex W. Wadman, President. Acceptance under the Act of June 5, 1943, at East Stroudsburg, Pa., authorized March 27, 1940. Subscription rates: $5.00 per year, single copy, 50

REX W. WADMAN
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Art Director

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FRONT COVER ILLUSTRATION: Greyhound Lines, the largest intercity bus operation in U. S. has operated more than 1400 General Motors Diesel coaches over 400,000,000 miles.

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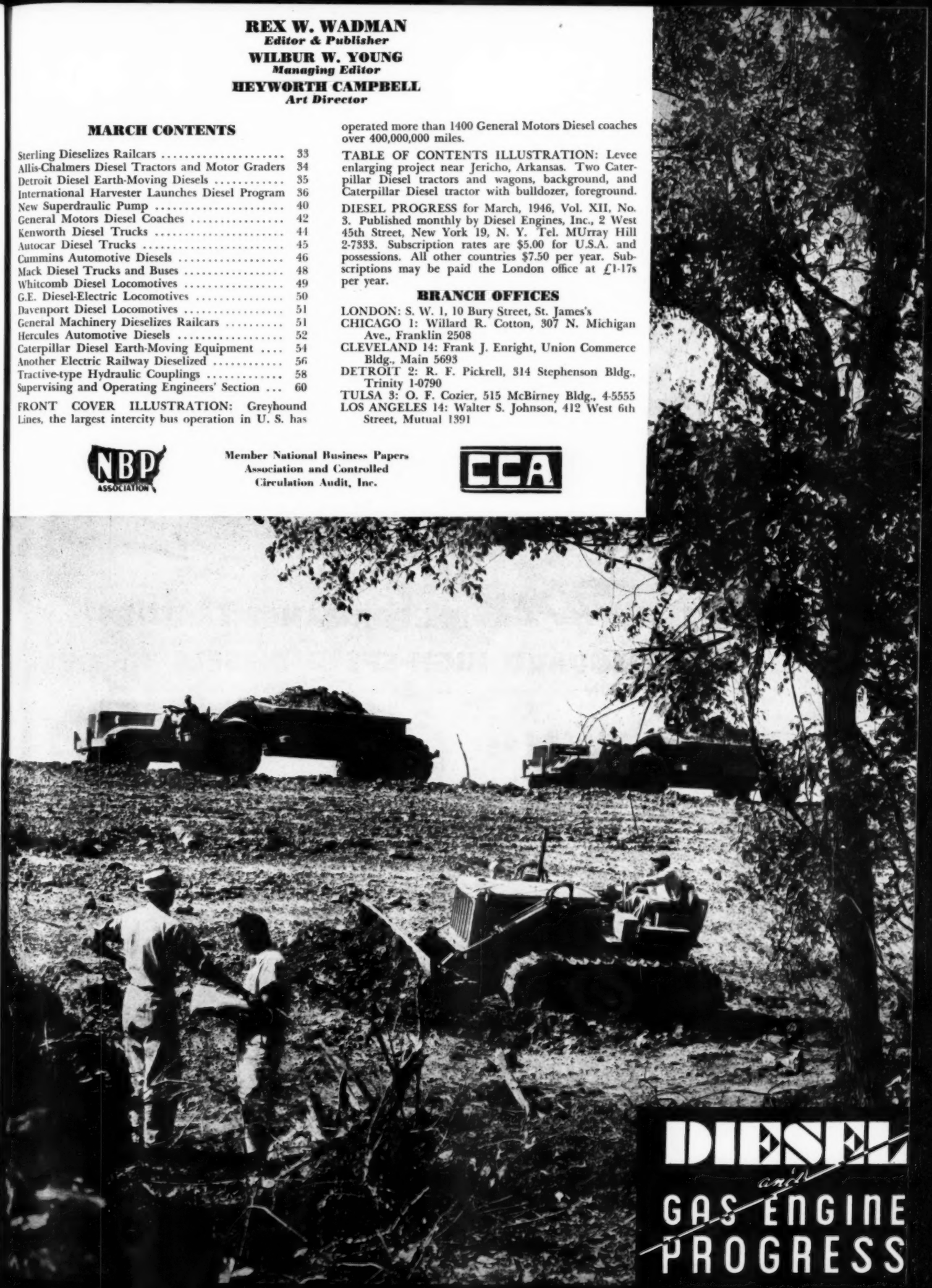
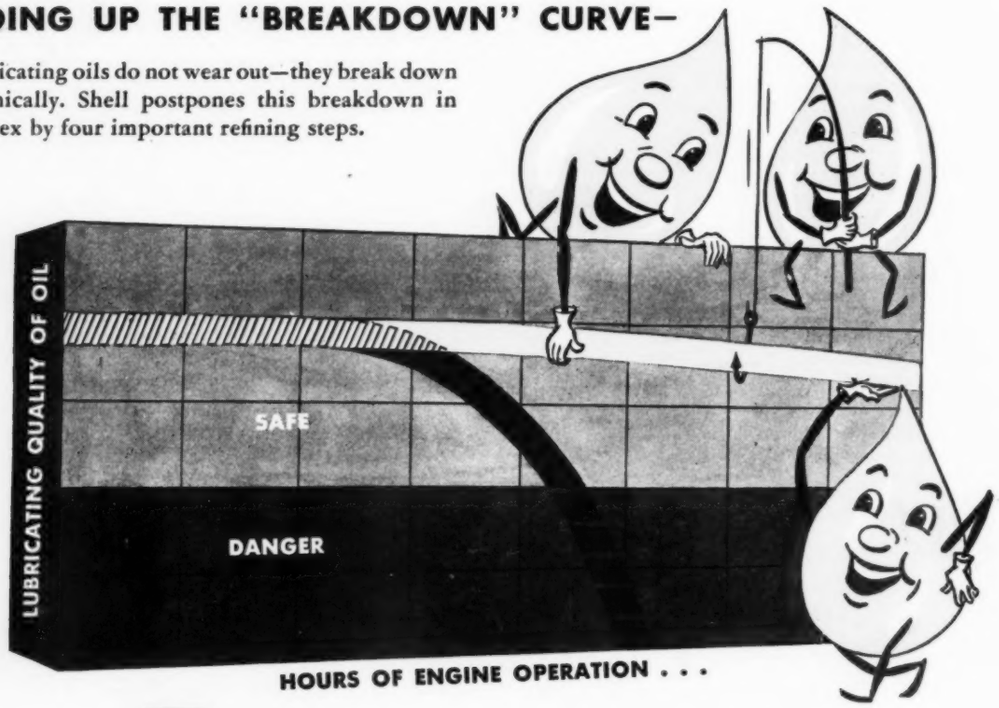


HOLDING UP THE "BREAKDOWN" CURVE—

Lubricating oils do not wear out—they break down chemically. Shell postpones this breakdown in Talpex by four important refining steps.



THESE 4 TALPEX PERFORMANCE FACTORS SAFEGUARD HIGH-SPEED DIESELS

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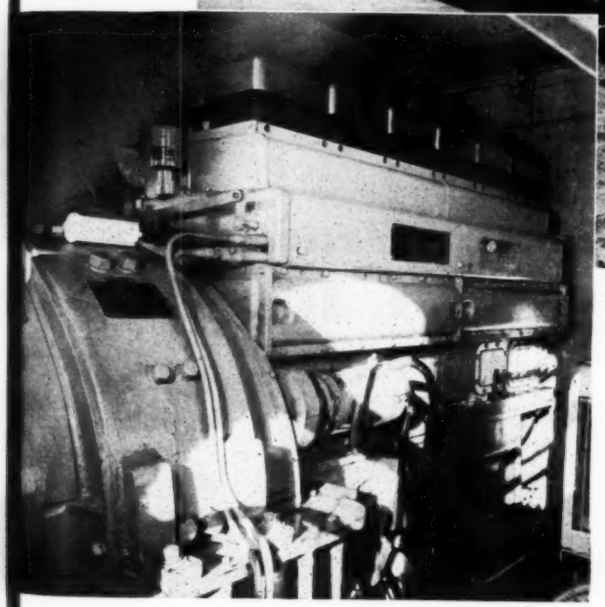
SHELL

SHELL DIESEL LUBRICANTS



Rock Island railcar No. 9049, formerly gasoline powered, has been refurbished and converted to Diesel propulsion.

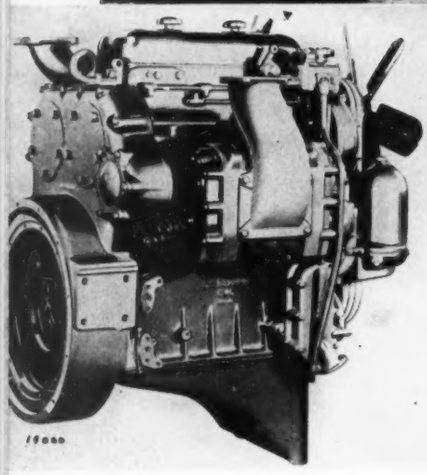
Close-up of the Sterling Viking Diesel propulsion engine which, although more powerful, occupies the same space as the original gasoline engine.

RAILCAR DIESELIZATION

THE Rock Island Railroad, keeping step with modern motive power trends, has repowered its railcar No. 9049 by replacing the original gasoline engine with a modern Diesel. Many advantages have resulted from this change including reduction of fire and explosion hazards, increased power and doubling of mileage range without increasing the size of fuel tanks, in addition to which the Diesel, of course, uses cheaper fuel.

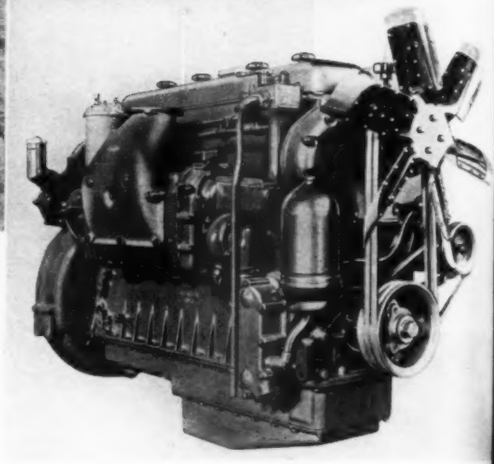
An interesting feature of this changeover was that the new Diesel, even though more powerful, because of its compact design was easily installed on the same bed that originally accommodated the gasoline engine. Characteristics of the Diesel were such that the original generator, base, radiator and various accessories could be retained.

For this step toward modernization the Rock Island selected a Sterling Viking Diesel of six cylinders with a rating of 275 hp. at the speed dictated by satisfactory generator output. Certain design features of this Sterling Viking engine render it most suitable for railcar service. First, its compact arrangement permits easy installation where space is at a premium, then all operating parts and subassemblies are designed for minimum weight within strength requirements and are easily accessible—all repairs and replacements can be made without the aid of a hoist. The engine is fitted with dual valves, hydraulic self-adjusting valve lifters and oil-cooled aluminum pistons. The crankshaft is cast. The smooth performance of the Sterling Diesel is a noticeable and highly desirable feature in this combination passenger and freight, self-propelled railcar. A small Witte Diesel generating set is installed for auxiliary lighting. Sterling pioneered in powering some of the first internal combustion engine-propelled railcars some 25 years ago. Today, in addition to the Rock Island, The Great Northern and Pennsylvania Railroads are employing Sterling Viking Diesels similarly.



An interesting "angle" on the flexibility of the Allis-Chalmers motor grader, seen here on a highway banking operation. All of the Allis-Chalmers units seen on this page are powered with General-Motors, 71-Series Diesel engines.

This General-Motors 3-cylinder, 71-Series, 2-cycle Diesel engine is one of the units used to power Allis - Chalmers equipment.



This 6-cylinder, 71-Series General - Motors 2 - cycle Diesel is used by Allis-Chalmers to power its heavier tractor-types.

Allis-Chalmers Tractors and Motor Graders
POWERED WITH G. M. DIESELS

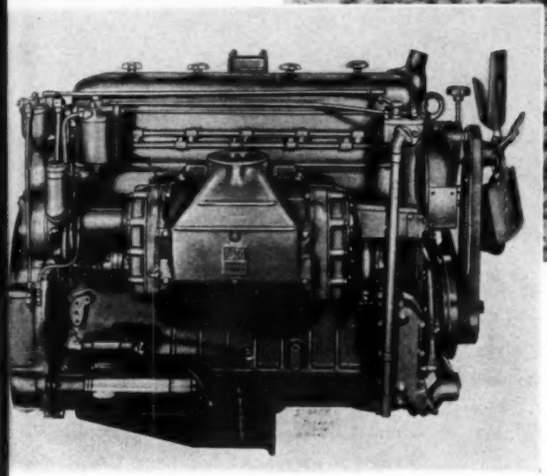
Allis-Chalmers HD-14 G.M. Diesel crawler-type tractor fitted with a Baker bulldozer leveling off heavy material on a highway project.

Here the Allis-Chalmers, Diesel engined motor grader is seen cutting a two foot flat bottom ditch. For this operation the unit has its Moldboard extended.

The Allis-Chalmers motor grader is seen here moving a large windrow.

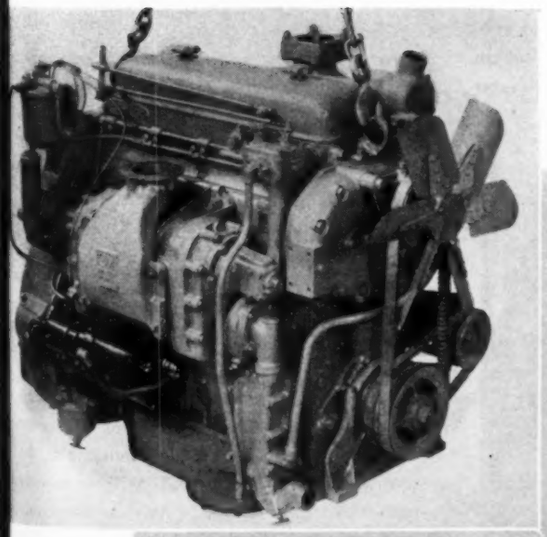
Fitted with a Carco logging arch, this Allis-Chalmers HD-14 crawler-type tractor is powered with a General-Motors 6-71 Series Diesel.

Heavy-duty Euclid trucks and tractors used extensively on earth-moving jobs are powered with this General-Motors 6-71 Diesel engine.



Detroit Diesel Division's

EARTH-MOVING DIESELS



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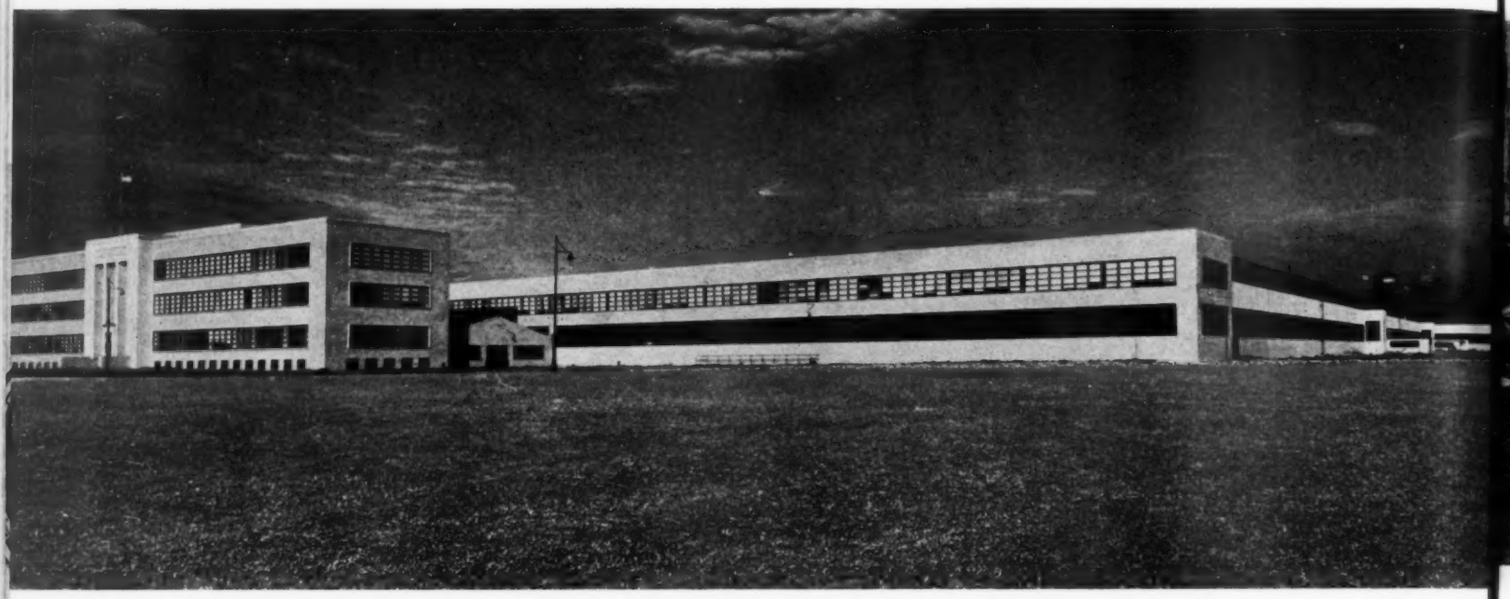
At the left is seen the General-Motors 4-71 Series Diesel engine which powers the versatile Koehring Dumptors seen working under a shovel, below.

INTERNATIONAL HARVESTER LA

TREMENDOUS DI



Above, quartering front view and below, airplane view of International Harvester's, Melrose Park plant, housing 2 million square feet of floor space designated for Diesel manufacture.

ONE of the Nation's largest war plants, the plant used by Buick to manufacture aircraft engines, has been acquired by International Harvester at a cost of nearly 14 million dollars.

Located at Melrose Park, Illinois, this plant is centered on a plot of 135 acres and embraces better than 2-million square feet of floor space. In it Harvester will employ 5,500 persons to build its expanded line of Diesel engines and tractors.

As you stand in the modern halls and offices and wander through the almost interminable manufacturing bays of this rugged steel and concrete structure with eyes futilely straining to see from one end to the other, you realize that Harvester means business—Diesel business! Picture this plant approximately 1/5 mile wide and 1/3 mile long earmarked for production of the current line of Harvester Diesels plus two new larger Diesels in the 100 hp. and 200 hp. ranges, also a new heavy crawler tractor of 130 drawbar horsepower, weighing 36,000 pounds—home of Harvester's Industrial Power Division. There you have a measure of International Harvester's faith in the future of Diesels—of the Diesel Industry itself. Yes sir, Harvester means business!

Even while Buick and Government personnel are feverishly winding up their affairs in curtained offices, Harvester has moved in and set up an impressive display of some thirty industrial power units including its full line of Diesels and both wheel and crawler type tractors and a complete marine Diesel based on the 6-cylinder engine with Twin Disc clutch and reverse gear also a forward power take-off with clutch. This marine job is rated 120 hp. at 1400 rpm.

On the walls surrounding the display are dozens of blown-up, on-the-job, views of Harvester Diesel equipment—a veritable panorama of the world in which Diesels will perform a vital role:—shovels, draglines, drill rigs, post hole borers, bulldozers, plows, harvesters, harrows, trucks, ditchers, generating and power units and so on and on. Featured is a wheel-type ID-9 Diesel tractor with Mississippi Wagon having a hydraulic ram that brings the weight of the wagon to bear on rear wheels of the tractor to get traction in a hard pull.

Yes—International Harvester has launched a tremendous Diesel Program.

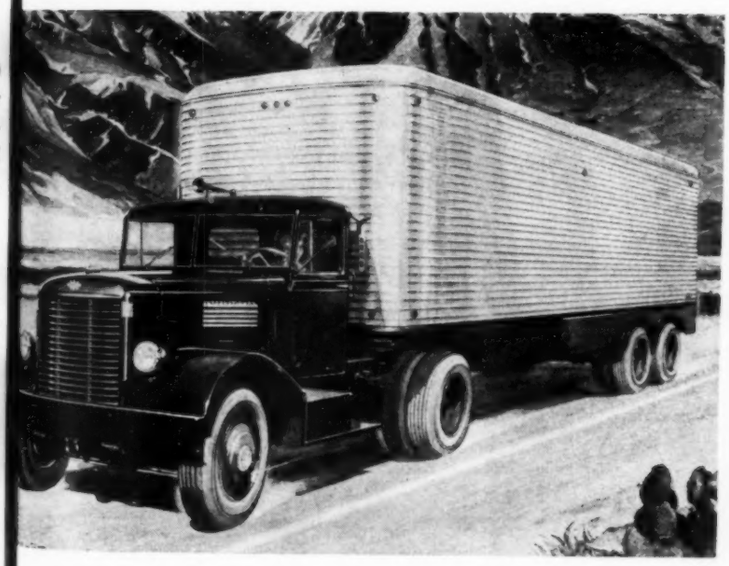
ER LAUNCHES

US DIESEL PROGRAM

By WILBUR W. YOUNG

International Diesel tractor on heavy logging job.

Bulldozing a logging trail through the forest.



Above and below are seen two of International Harvester's new "Western Freighter" truck models.

Maintaining fire trails in the Angelus National Forest, Southern California with International Diesel tractor fitted with a Trojan 10 ft. blade.

International "Western Freighter" six-wheel chassis offered with 3 models of Cummins Diesels or International-Continental and Hall Scott engines.

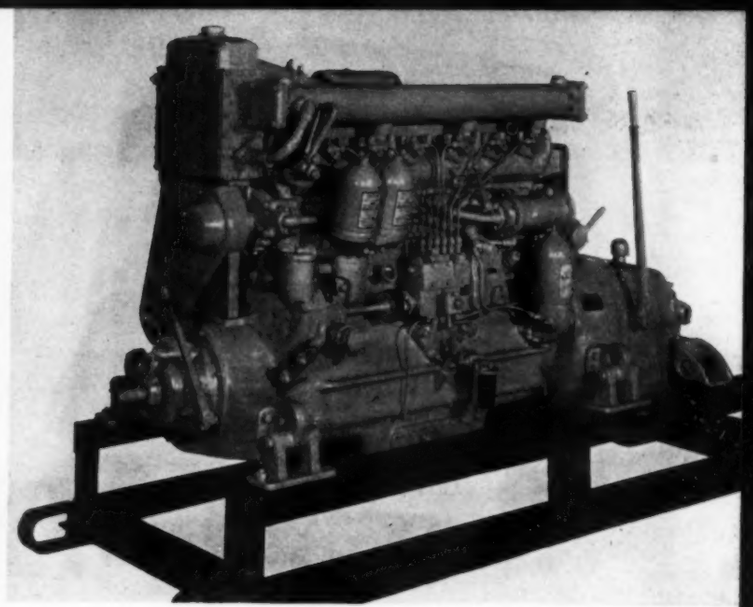
M-R-S Manufacturing Company has modified this International ID-9 Diesel tractor for hauling its Mississippi Wagon. Note the hydraulic ram, center, which brings additional weight to bear on tractor rear wheels for traction in hard pulls.

Largest and smallest in the International tractor line. The new TD-24 Diesel crawler type weighing 35,000 pounds is contrasted with the wheel-type Farmall "Cub" weighing about 1,050 pounds.

ON these pages are illustrated some of the Diesel units which International Harvester will build in the new Melrose Park plant. Outstanding is the big new TD-24 Diesel Trac Trac Tor, a crawler type of 130 maximum drawbar horsepower and 150 maximum belt horsepower. This is the largest tractor yet built by International—weighs 35,000 pounds, has eight speeds forward from 1.6 to 7.8 mph. Also noteworthy is the International Diesel marine engine. The line of Harvester Diesels now ranges from 35 to 200 hp.

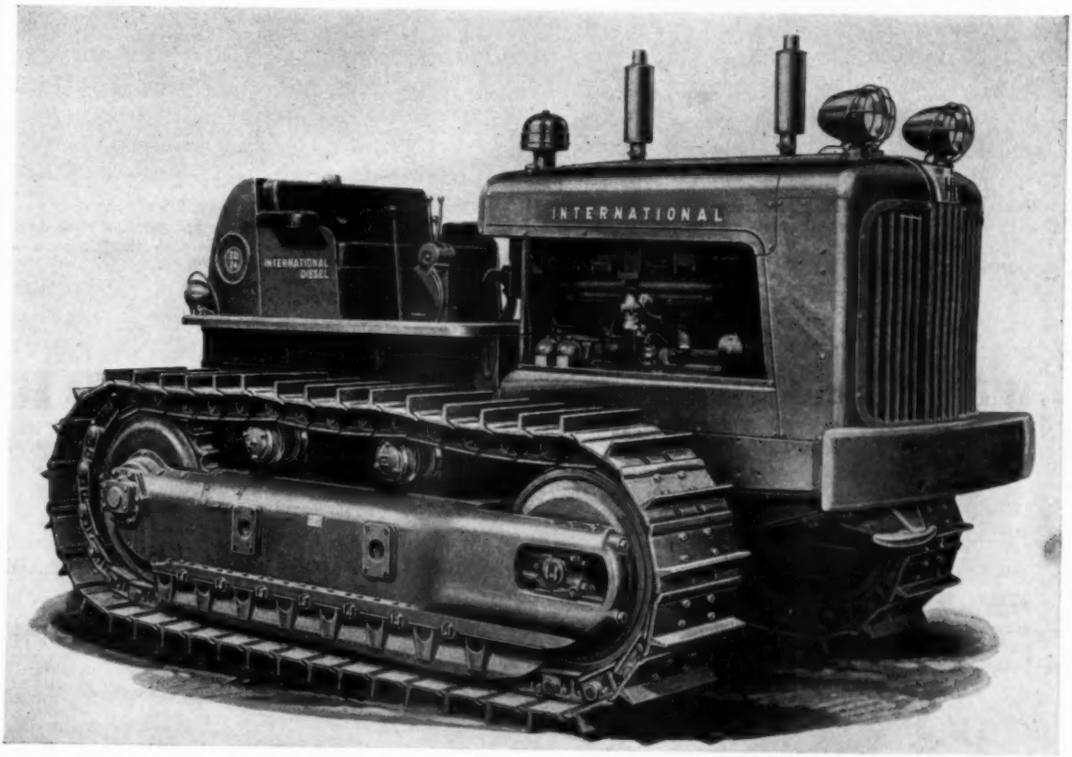
Truckwise, International Harvester has just announced its new heavy-duty West Coast models to be built in the company's recently acquired Emeryville, California plant. Known as International "Western Freighters," these six highway transport models have gross weight ratings of 30,000, 40,000, 45,000, 65,000 and 90,000 pounds. Optional power units offered for these heavy-duty trucks are International-Continental and Hall-Scott gasoline engines and three different models of Cummins Diesels. According to International Harvester, Diesels have long been favored in heavy-duty vehicles used on the West for fast over-the-highway as well as off-highway hauling. Safety and driver's comfort are emphasized in International's "Western Freighters."

Driver comfort and convenience are emphasized in the new International "Western Freighter," heavy duty truck cabs.



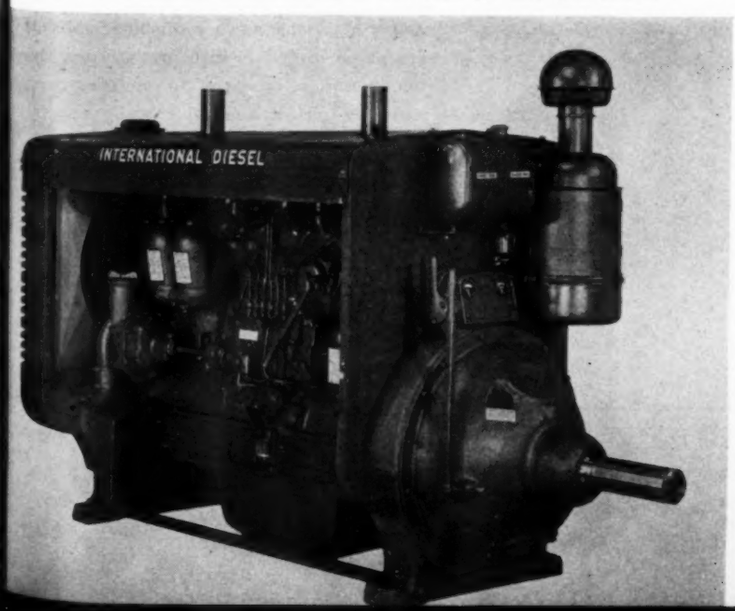
International's new marine Diesel is complete with all operating accessories. It is rated 120 hp. at 1400 rpm.

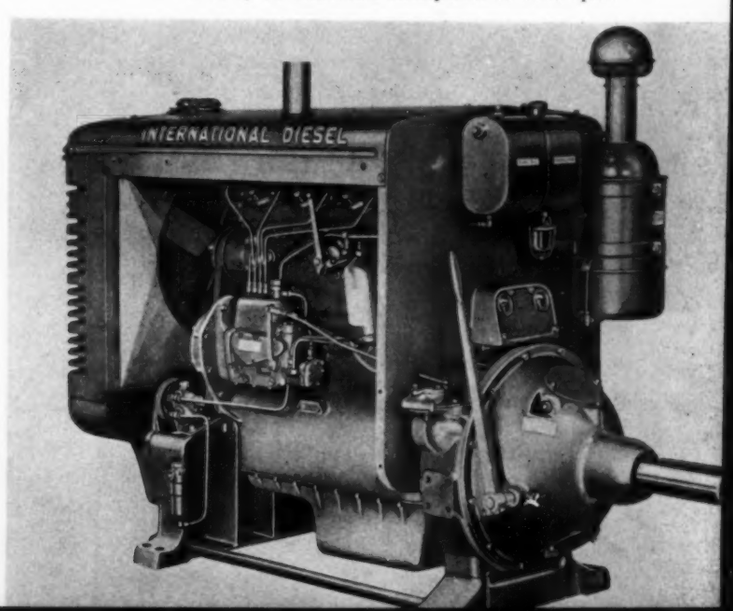
Harvester's new TD-24 Diesel crawler tractor delivers 130 maximum drawbar horsepower and 150 maximum belt horsepower. This unit will be built in the new Melrose Park plant.

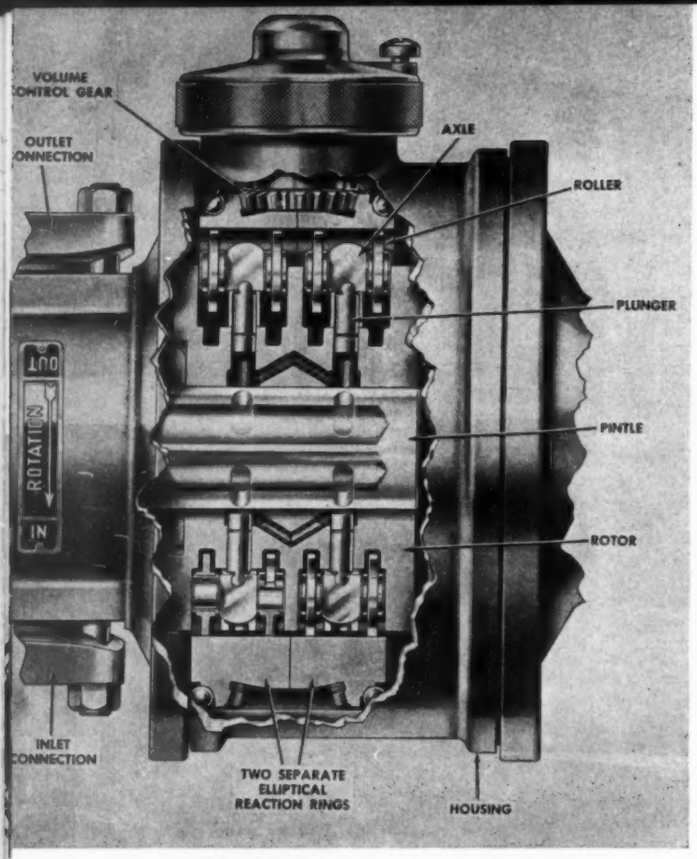


The International Diesel power unit complete with radiator and clutch, rated 120 hp. at 1600 rpm. will soon go into production.

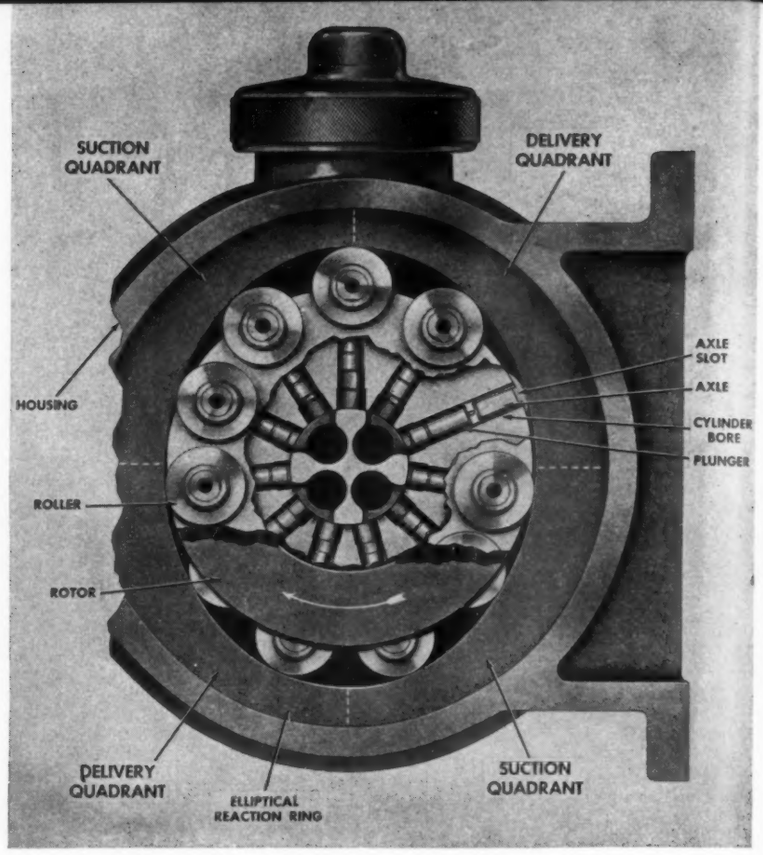
Also scheduled for production in the near future is this Diesel power unit of 76 maximum horsepower at 1400 rpm.







Cutaway view of the variable delivery Superdraulic pump with pintle, axles and plungers and elliptical reaction rings in section. Note porting of pintle and cylinder connecting passages.



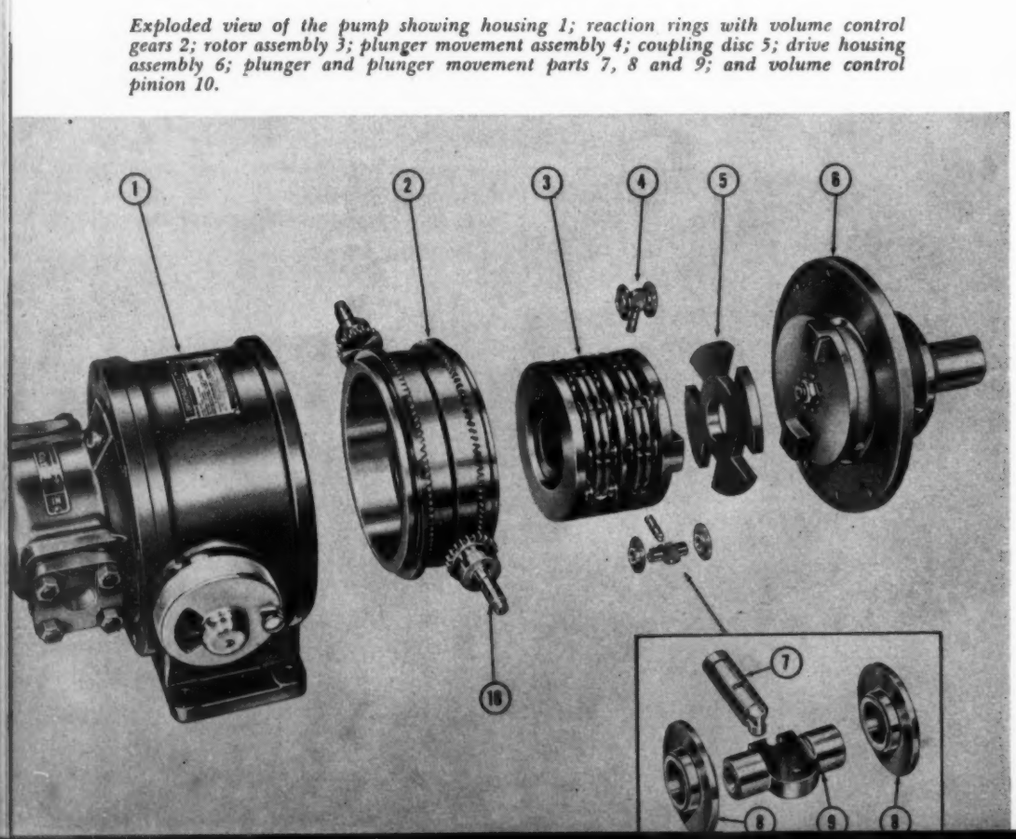
This sectional, partial cutaway view emphasizes the function of the elliptical reaction ring and shows how each plunger passes through two delivery strokes with each revolution of the rotor.

Will Automotive Drives Be FULL HYDRAULIC?

Revolutionary Hydraulic Generator May Open Way to Simple, Direct Hydraulic Vehicle Propulsion and Power Transmission

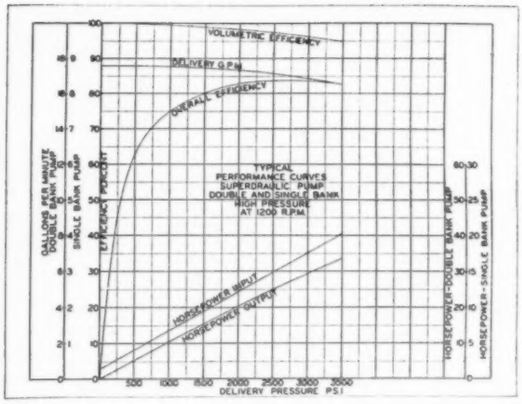
By WILBUR W. YOUNG

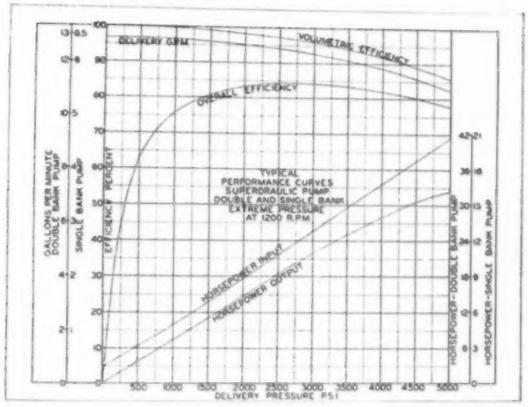
Exploded view of the pump showing housing 1; reaction rings with volume control gears 2; rotor assembly 3; plunger movement assembly 4; coupling disc 5; drive housing assembly 6; plunger and plunger movement parts 7, 8 and 9; and volume control pinion 10.



DETROIT, January 24: Some fifty pairs of eyes fairly popped at what they saw in the Superdraulic Corporation shop here today—a hydraulic generator with fingertip control delivering from 0 to 5000 psi and 40 hp. with volume ranging from 0 to 17 gpm. at 1200 rpm. Now that is double the pressure previously obtainable and the combined ability of this pump to deliver high pressure plus high volume without benefit of accumulating equipment, set imaginations to running rampant.

Of course hydraulic tonnage, as a force, has had wide application in myriad industrial and laboratory operations, but tonnage combined with volumetric capacity—both inherent characteristics of the Superdraulic Pump—excites speculation on this device as a means of power transmission. Visualize the pump as delivering a suitable volume of hydraulic liquid under adequate pressure—both easily controllable





from 0 to maximum—to one or more hydraulic turbines (motors) to drive trucks, buses, automobiles, locomotives, tractors, ships and industrial equipment. That is the vista that opened up as engineers and technical writers witnessed the demonstration under actual operating conditions. And bear in mind that this new pump has been developed in two types, one for constant delivery, the other for finger-tip-controlled variable delivery.

Let us see what this unique and surprisingly compact unit is and how it works. The Superdraulic Pump is a radial type plunger pump arranged so that centrifugal force maintains the plunger rollers in contact with an elliptical reaction ring. The plungers are fitted to cylinders in a rotor in one or more banks of eleven plungers per bank. The rotor turns on a fixed pintle which has suitable ducts and ports for directing the oil inlet into those cylinders passing through two opposite quadrants and also for directing the oil delivery out of those cylinders passing through the other two opposite quadrants.

Each plunger makes two inlet and two delivery strokes per revolution. A sturdy equalizing axle, journaling a roller at each end, is universally attached to the outer end of each plunger. This unique construction provides ample bearing areas for the plunger load components exerted radially and rotatively on the axle bearing surfaces and insures zero side loading of the plunger.

In variable delivery pumps, two banks of eleven plungers each are arranged in a single rotor. The plungers in the two banks are arranged in parallel relation. Each pair of parallel cylinders is in open communication by means of a drilled passage in the rotor. The plunger rollers, of each bank, roll against a separate elliptical reaction ring. These reaction rings are rotatably mounted in the pump housing and are geared together so that they rotate in opposite directions in response to rotation of the volume control gear.

At full delivery, the major axes of the elliptical reaction rings are parallel, and at zero delivery, the major axes are 90° apart. Under the latter condition, the net delivery stroke is zero since the displacement of the plungers moving radially outwardly, exactly equals the displacement of the plungers moving radially inwardly, in both delivery quadrants and both suction quadrants.

As the angle between the major axes is reduced from 90°, the net plunger displacement increases. When this angle becomes 0°, the major axes are parallel and both plungers of a pair of parallel plungers reciprocate in phase through full delivery and suction strokes.

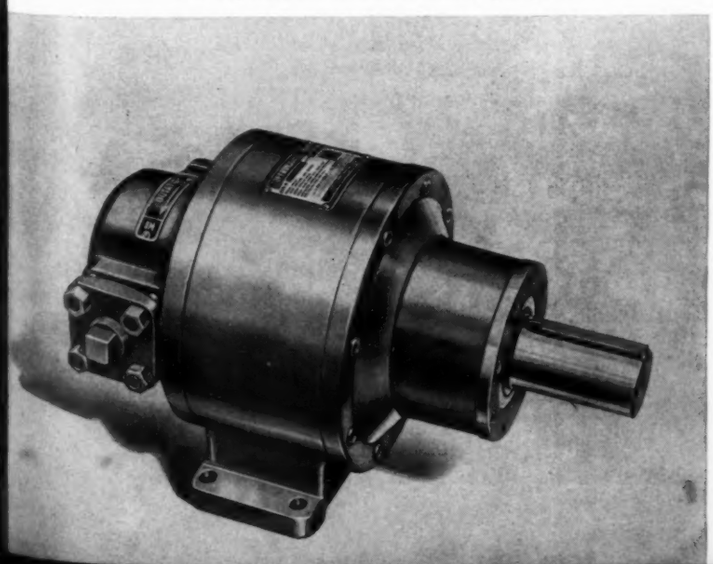
Provision is made for a simple spring type plunger return. This is to insure return of the plungers when pumps are operated below the speed at which centrifugal force is adequate (approx. 100 rpm.). Variable delivery pumps are equipped with any one of a number of different type volume controls which are interchangeably mounted on the pump. The sensitive manual dial type control may be mounted on either side of the pump. The surge-proof balance pressure compensator is constructed to mount on either side of the pump with a volume dial indicator mounted on the side opposite the pressure compensator.

Plunger reaction loads exerted on the elliptical reaction rings are balanced through the volume control gear, the torque of one reaction ring balancing that of the other. Thus light and sensitive manual or automatic pressure and volume controls can be interchangeably employed.

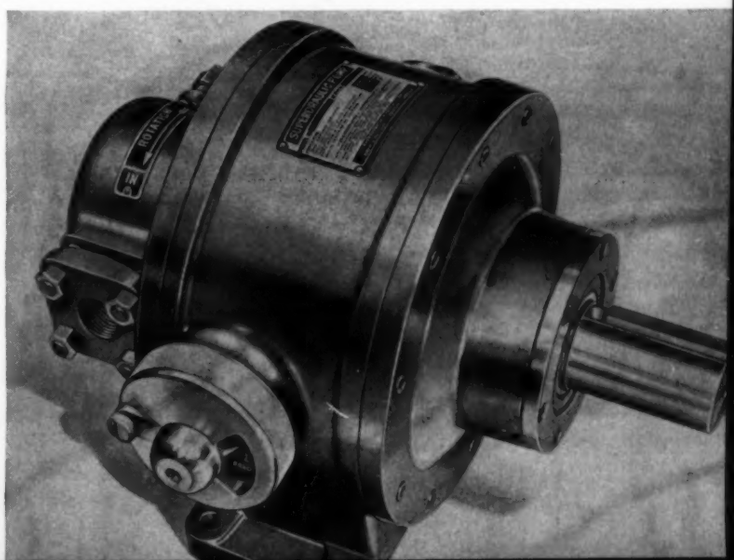
A small oil circulating pump is incorporated for the purpose of circulating oil under near zero pressure direct from the oil tank through the pump housing and back to the tank. This insures sufficiently low pump housing temperatures of the variable delivery pump under the condition of extreme pressure operation at zero or near zero delivery.

Like most refined applications of well-known engineering principles, the Superdraulic Pump is simplicity itself, taking full advantage of balanced forces to produce exceedingly high pressures and high volumetric delivery without resorting to heavy sections. A man can easily lift the 40 hp. unit—in fact it is about the size and weight of a ¼ hp. electric motor.

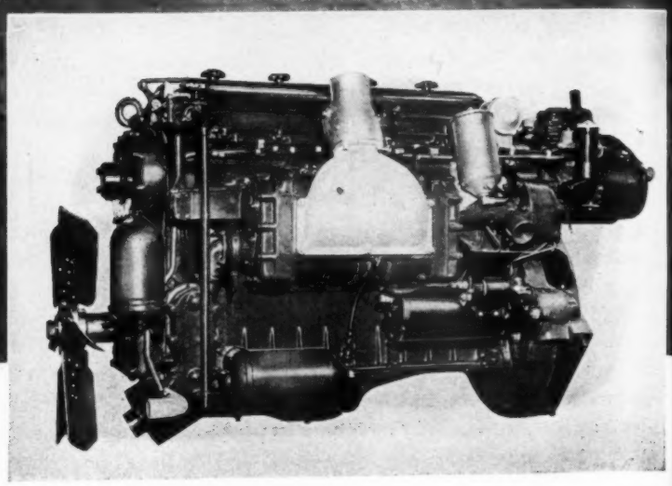
The Superdraulic constant delivery pump.



The Superdraulic variable delivery pump.



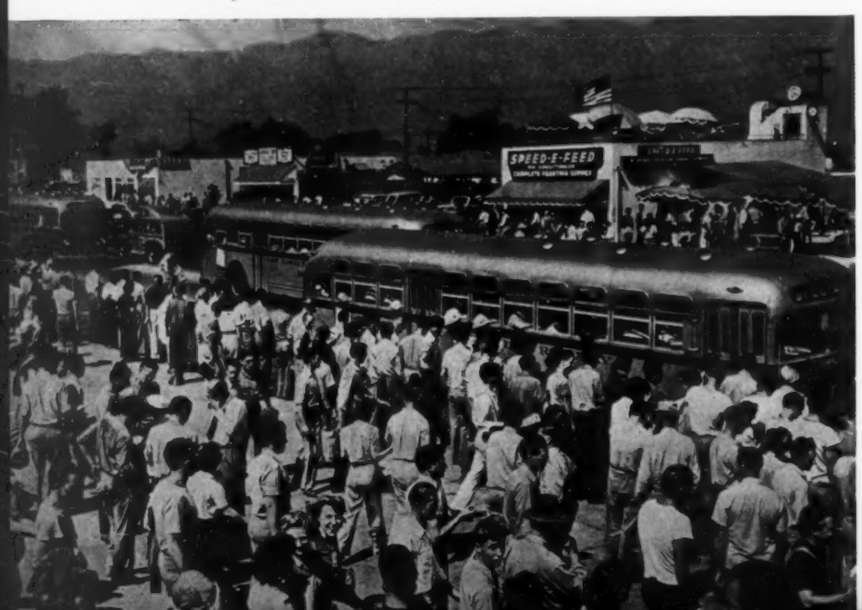
In this view are seen some of the 300 General Motors Diesel coaches owned by the Navy and operated by Pacific Greyhound to move workers at Mare Island shipyards.



This is the General-Motors 6-cylinder, 2-cycle coach Diesel.

GENERAL MOTORS' 1946 COACH PRODUCTION WILL BE 85% DIESEL

The Los Angeles Transit Line and Pacific Electric Railroad which jointly operate Los Angeles Motor Coach have 371 General-Motors Diesel coaches, some of which are seen in this view.



WITH 180 coach operators, throughout the country, now using 6300 General Motors Diesel coaches and 100 more operators awaiting delivery of Diesel equipment the General Motors Truck & Coach Division plans to power 85% of its 1946 coach production with Diesels. The 71-series, 2-cycle Diesel, used in these coaches, has proved sensationally successful in motor coach operation, according to a GM spokesman. Operators have reordered 4, 6, 8 and some as many as 15 times. The Division hopes to build better than 4000 Diesel coaches this year—more than double any previous year's production. The General Motors line of Diesel coaches includes all types—cross country, interurban, city and industrial—as illustrated on these pages.

One of 69 General-Motors Diesel coaches of 29 and 37 passenger capacity owned by the Missouri Pacific Transportation Company.

View of a General-Motors Diesel coach loading in Chicago. The Omnibus Corporation operating New York City Omnibus, Fifth Avenue Motor Coach and Chicago Motor Coach has 455 Diesel coaches.

First to operate Diesel coaches in the United States, the Public Service Transport of New Jersey is now the largest operator of urban coaches. The accumulated mileage of 719 of this company's fleet of over 1200 General-Motors Diesel coaches was in the order of 130,000,000 miles as of January 1.

The smallest Diesel coach now operating in the United States is this General-Motors 25 and 27 passenger unit powered with a 3-cylinder, General-Motors 2-cycle Diesel.

Thoroughly Diesel-minde the Burlington Railroad, i addition to its fleet of stream line Diesel trains, operate through its subsidiary, Bur ington Transportation Com pany, 51 General-Motor Diesel intercity coaches. Th coach seen here has operate more than one and one-ha million miles.

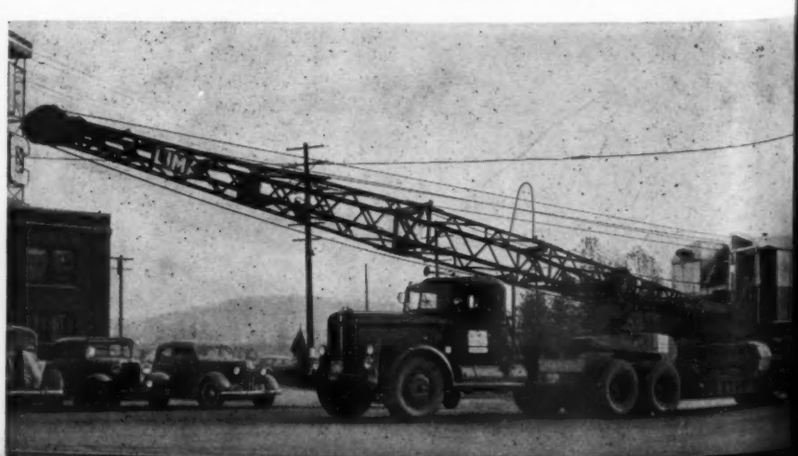
Fleet of Kenworth, Cummins Diesel-engined trucks owned by Hills Transportation Company of San Francisco and Los Angeles.

KENWORTH EXPANDS TRUCK-BUILDING FACILITIES

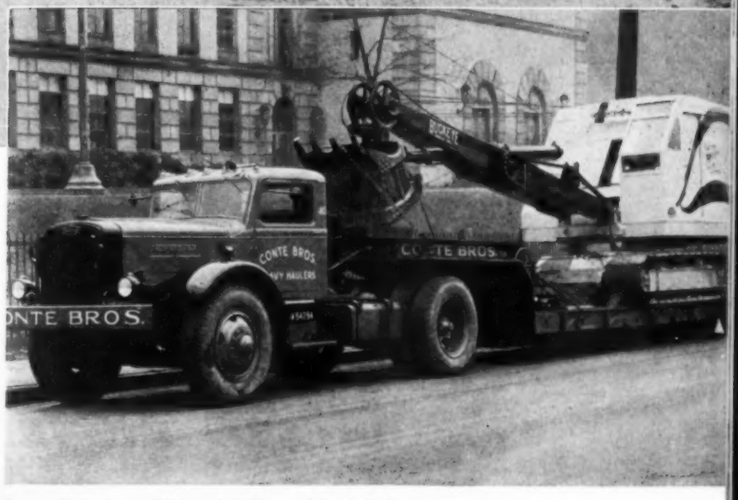
KENWORTH Motor Truck Corporation, a subsidiary of Pacific Car and Foundry Company, recently negotiated the purchase of the Fisher Body Plant in Seattle from General Motors Corporation. This makes possible the consolidation of Kenworth's truck and bus business with Pacific Car and Foundry Company's school bus and coach body business. The new plant occupies a plot of over 15 acres with the main buildings covering better than 4 acres. All Kenworth truck and bus manufacturing will be centered in the new plant. The Kenworth line includes heavy-duty, custom-built trucks powered with Cummins Diesels—some types of which are illustrated on this page. The company is preparing for a sizable increase in its rate of production.

Kenworth logging truck dumps its load in mill pond. Powered with a Cummins Diesel this husky unit with 2 trailers handles up to 30,000 board feet of timber for its owner, Snoqualmie Falls Lumber Company.

Transporting a heavy crane with Kenworth Diesel truck and trailer owned by Northwest Hauling Company of Seattle.



Owned by Bradley Mining Company, these Autocar, Cummins Diesel engined trucks with 10-yard rock bodies are in use at the Yellow Pine Mine, Stibnite, Idaho.



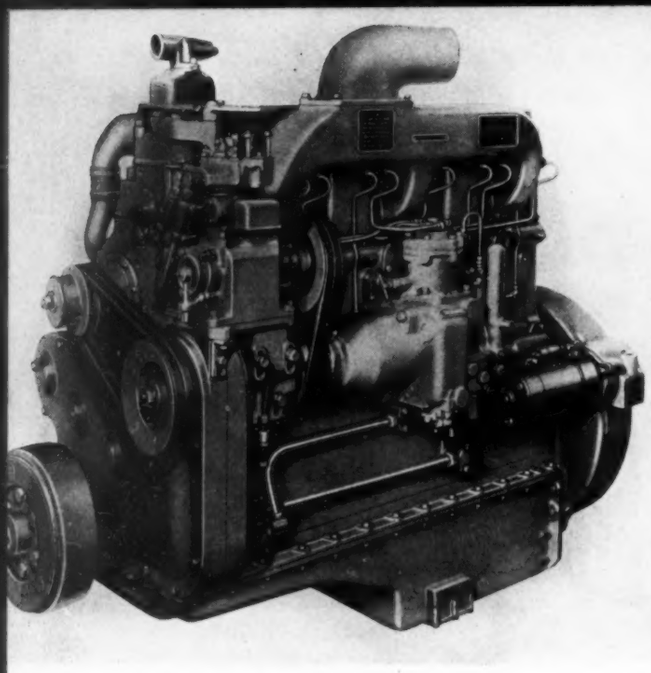
Seen here is a 20-ton Buckeye shovel being transported on a Carry-all low-bed semi-trailer, pulled by an Autocar, deluxe cab tractor powered with a Cummins Diesel.

Here is an Autocar deluxe all steel cab, Cummins Diesel truck with an Oil Field body transporting a Draworks power unit consisting of a Waukesha engine and transmission weighing 15,000 lbs.

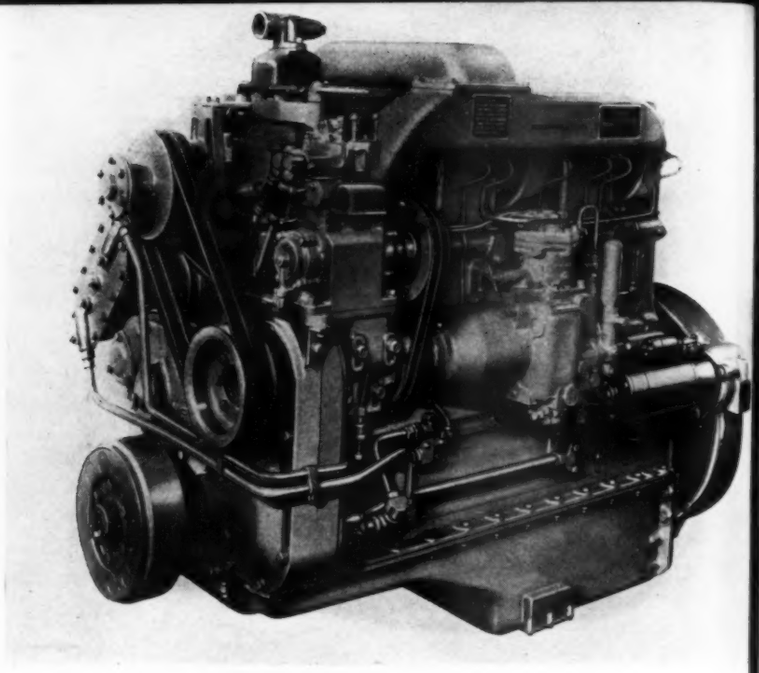
Autocar Diesel Trucks Seen for Long, Heavy Hauls

This Kingham refrigerator semi-trailer, 26 ft. long, operates from Mexico City to various points in the United States. The tractor unit is an Autocar deluxe cab, Cummins Diesel engined unit. Total axle capacity is 36,000 lbs.

Here another Autocar, Cummins Diesel engined tractor unit is seen hauling a Fruehauf platform trailer loaded with cylinders of phosgene gas. The payload in this case is 43,200 lbs.



The Model NHB-600 Cummins Diesel is comparatively new, having been first placed on the market in 1945. This model features dual exhaust and intake valves, larger displacement and increased rpm. as well as higher horsepower than the original Model H. This model develops 200 hp. at 2100 rpm,

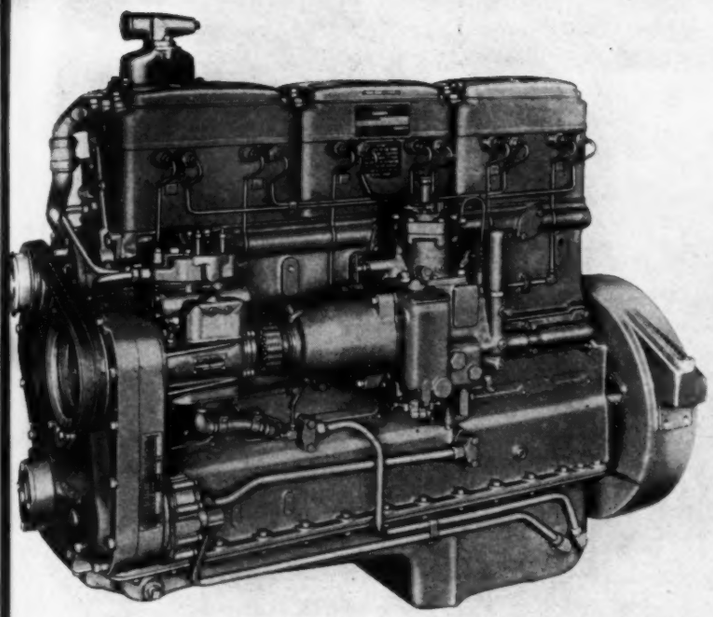


Weighing only 10½ lbs. per horsepower, this Model NHBS-600 Cummins supercharged Diesel develops 275 hp. at 2100 rpm. maximum. This engine has dual exhaust and intake valves, 5¼ in. bore, 6 in. stroke and 743 cubic in. displacement.

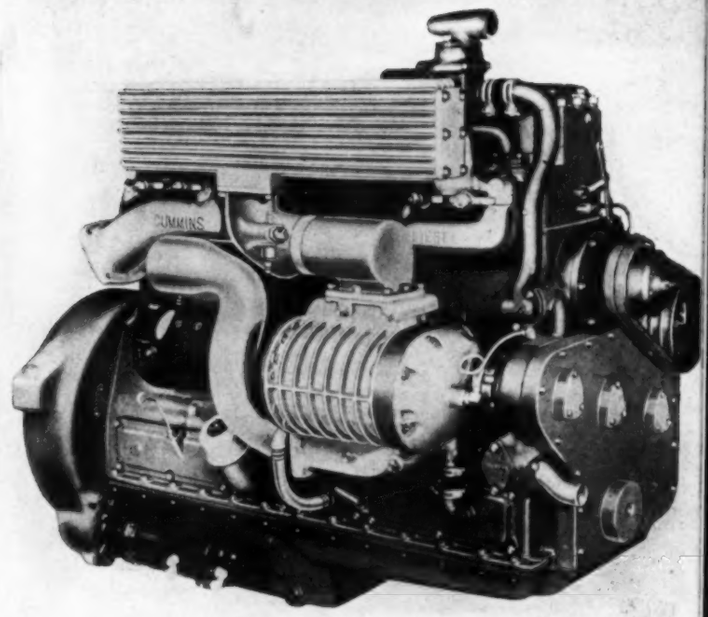
CUMMINS—
AUTOMOTIVE
DIESEL PIONEER

Claimed to be the World's largest truck tanker, this unit hauls 12,000 gallons a trip. It is a Butler-built transport tank-train, powered with a 200 hp. Cummins Diesel in a Mack tractor. Gross train weight is 135,050 lbs.

A 50-ton dump truck, one of a fl of 40 operating in Canada's larg open pit mining developme These units are powered w Cummins heavy-duty truck Dies



Since 1932 when Cummins introduced its first successful automotive Diesel, heavy-duty truck operations have been greatly revolutionized, both on and off the highway. This Model HB-600 engine is the "parent" of all Cummins Diesels. It is a 6-cylinder engine of 672 cubic in. displacement developing 150 hp. at 1800 rpm. maximum.

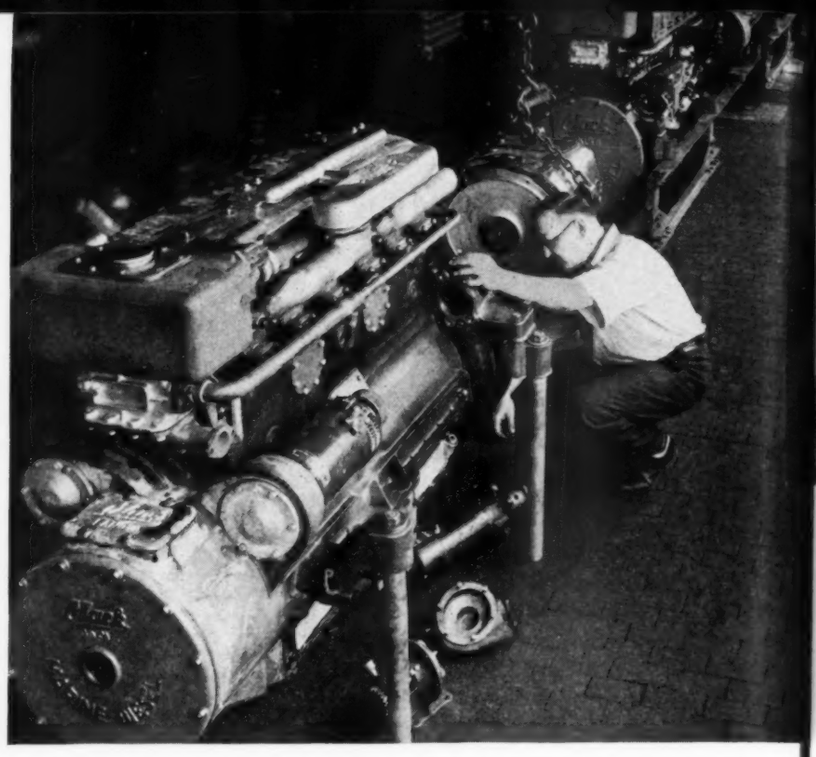


A modern version of the Cummins Model H Diesel taking advantage of supercharging to reduce the weight per horsepower ratio. This is the Cummins Model HBS, six cylinder Diesel developing 200 hp. at 1800 rpm. and occupying no more space than its 150 hp. predecessor.

CUMMINS LINE FEATURES SUPERCHARGED MODELS AND LOWER WEIGHT PER HORSEPOWER

125-tons of logs rolling out of the woods near Snoqualmie Falls, Washington on 30 trailer wheels hauled by a Peterbilt truck powered with a 200 hp. supercharged Cummins Diesel.

Surface transportation system of New York is now operating twenty-six of these Mack 40-41 passenger transit type busses. They are Diesel-electric drive powered by Mack-Lanova Diesels. Forty more similar units are on order.



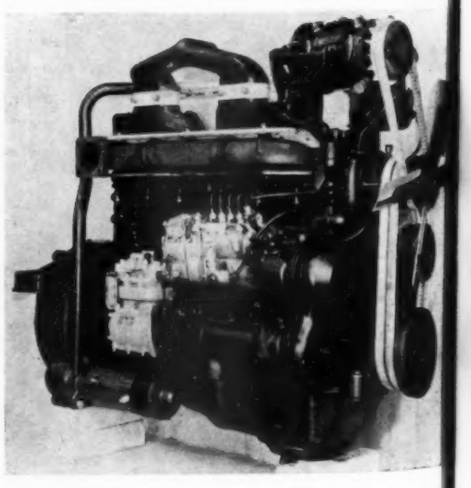
View of the assembly line for Mack Mariner Diesel engines in the Mack Plainfield, New Jersey plant.

View of a Mack heavy-duty 6-cylinder cargo truck with double rear tires supplied to the British and American armies. Unit is powered with Mack-Lanova Diesel.

MACK DIESEL BUSSES, HEAVY-DUTY TRUCKS AND MARINE DIESELS

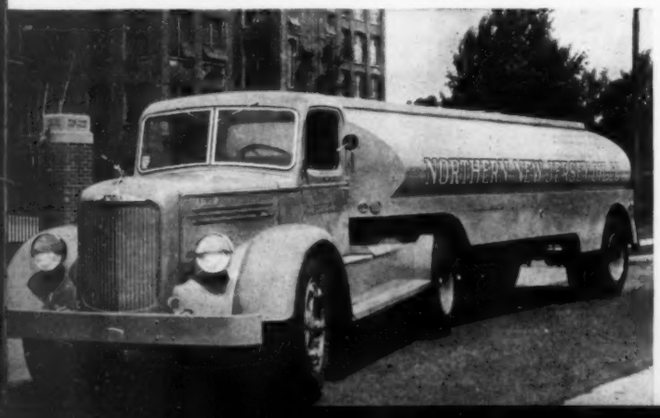
This unit is similar to the one shown next above except it has single rear tires.

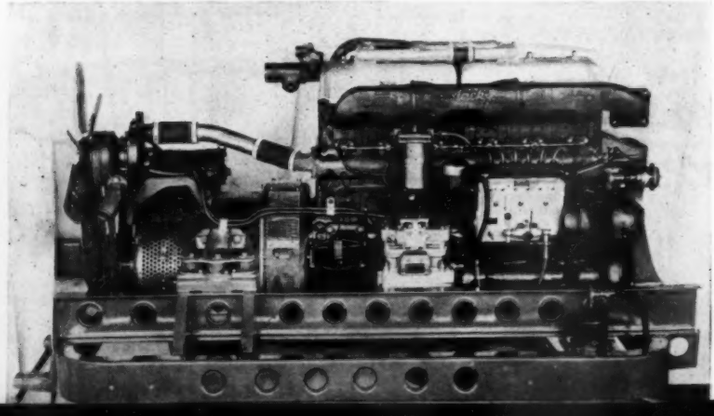
Mack tractor and semi-trailer tank truck. Powered with a Mack-Lanova Diesel. This is a new model in the Mack line.

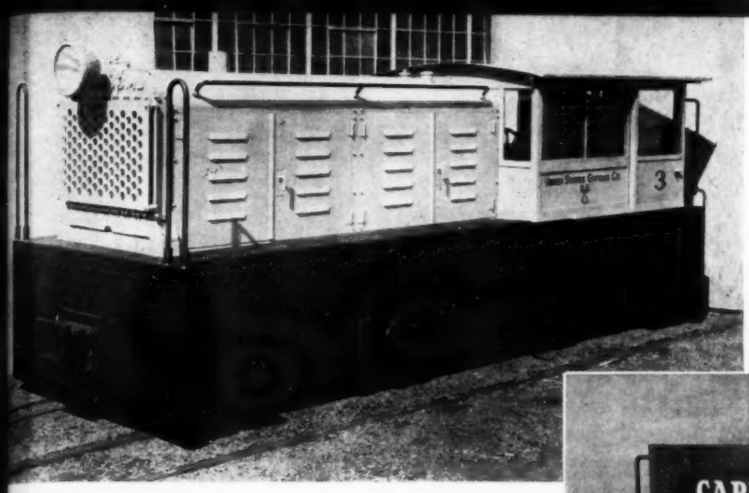


This is a Mack E and D–405 heavy-duty truck Diesel fitted with Lanova combustion system.

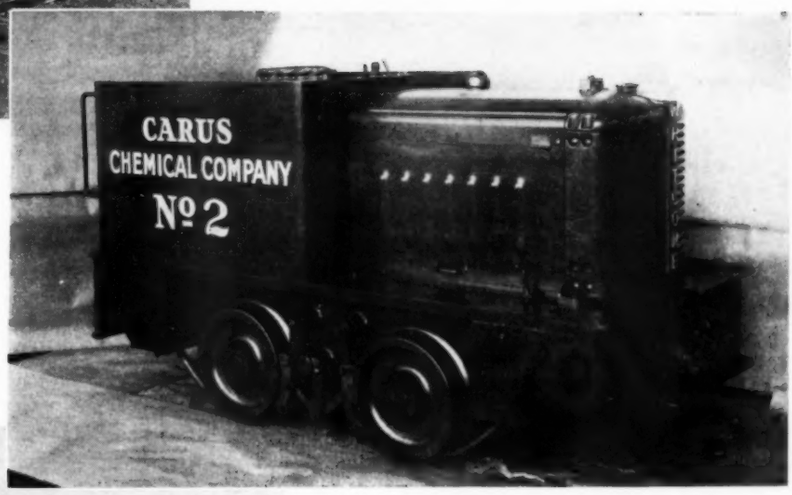
This view shows the method of transversely mounting Mack-Lanova Diesel in a Mack bus.



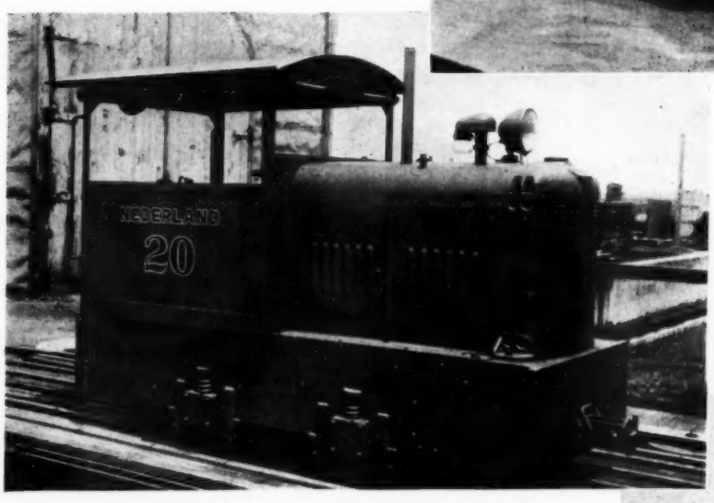




Whitcomb mine-type Diesel mechanical locomotive powered with a Cummins 6-cylinder, and 85-150 hp. engine owned by U. S. Gypsum Co.

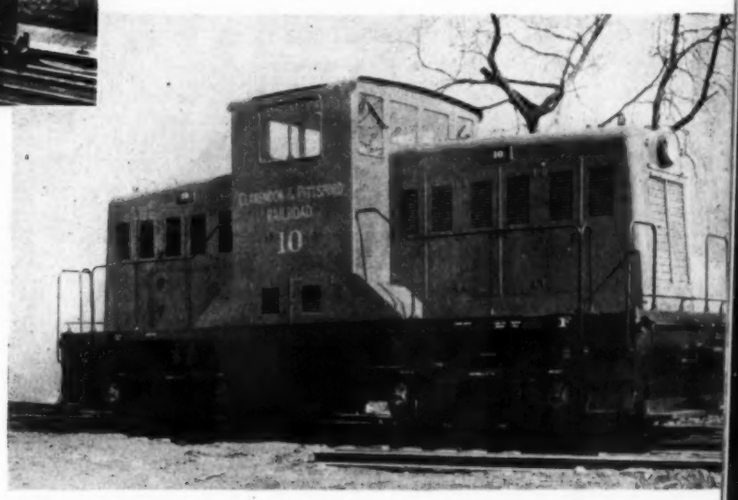


Small yard-type Whitcomb locomotive powered with an International engine used by the Carus Chemical Company about its plant.

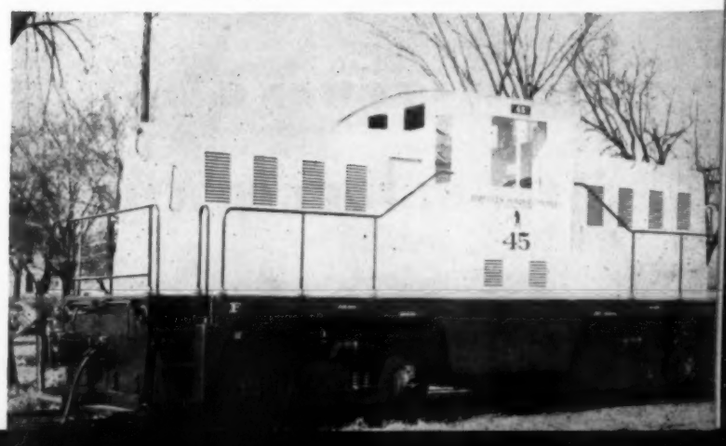


A Diesel yard-type locomotive which Whitcomb built for service in Holland. Equipped with mechanical drive this locomotive is powered with a Caterpillar 6-cylinder, 82 hp. Diesel.

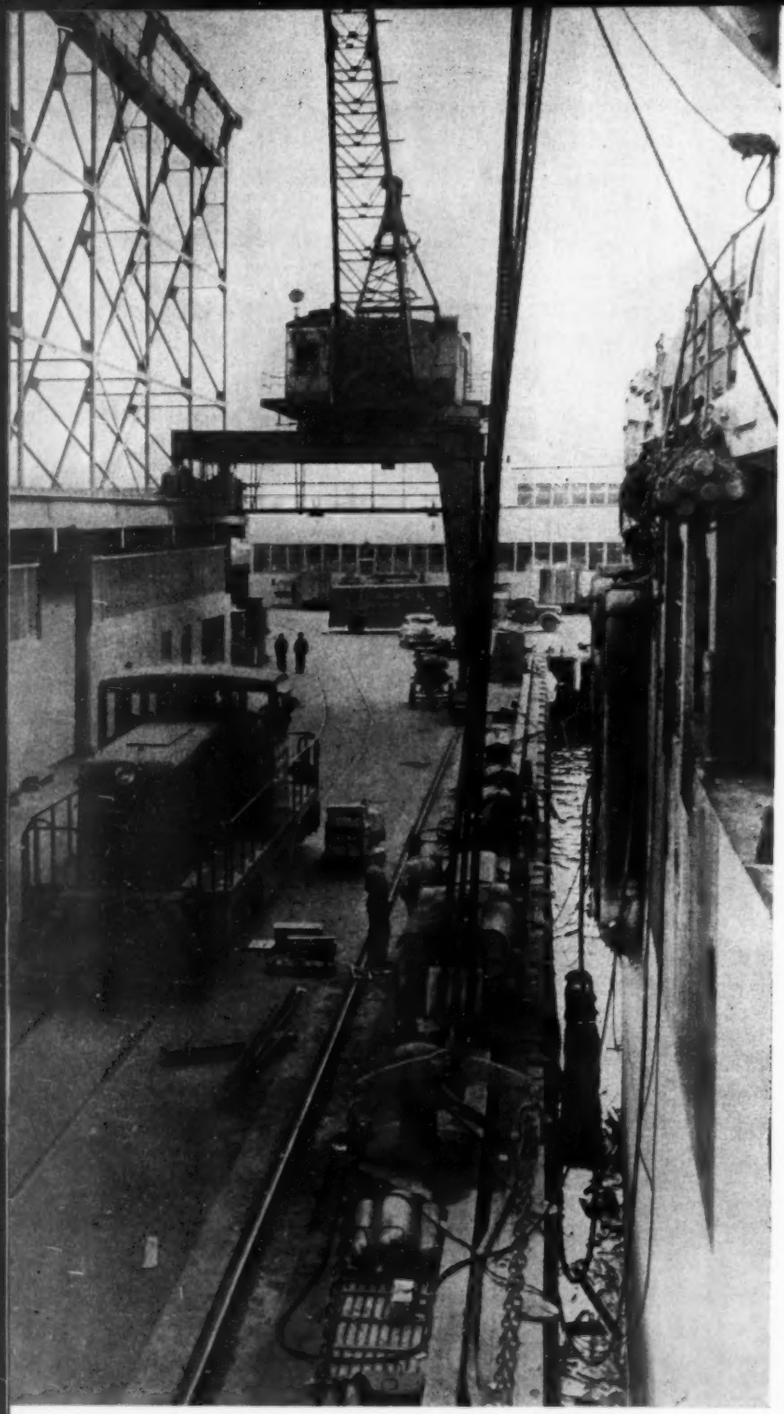
Whitcomb switching-type Diesel-electric locomotive, two of which are in operation on the Clarendon & Pittsford Railway, a subsidiary of Vermont Marble Company. This unit is powered with two Caterpillar 8-cylinder Diesels rated 135 hp. for continuous service.



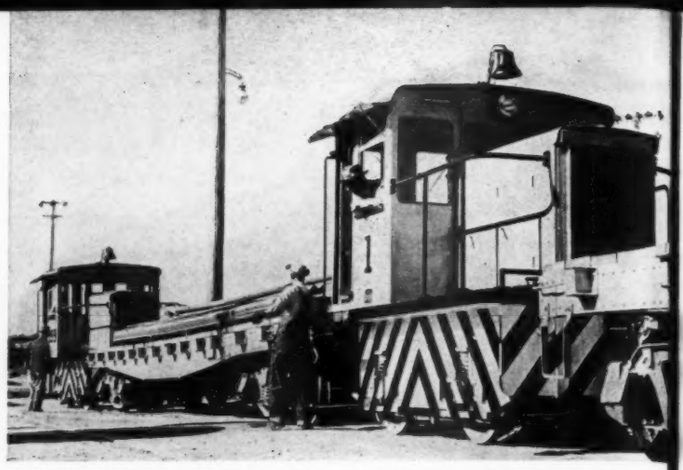
WHITCOMB MINE, INDUSTRIAL AND SWITCHING-TYPE DIESEL LOCOMOTIVES



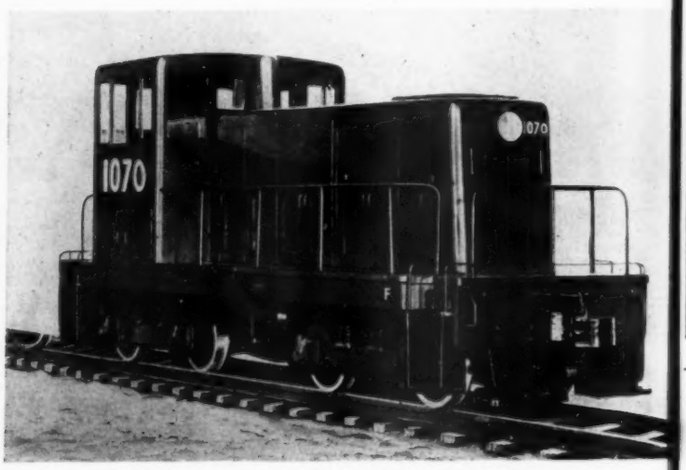
Owned by the Hercules Powder Company, this Whitcomb Diesel electric switcher has two Cummins 6-cylinder, 120-200 hp. supercharged Diesels for prime movers. The units illustrated on this page are typical of a wide variety of Diesel-electric and Diesel-mechanical locomotives built by Whitcomb.



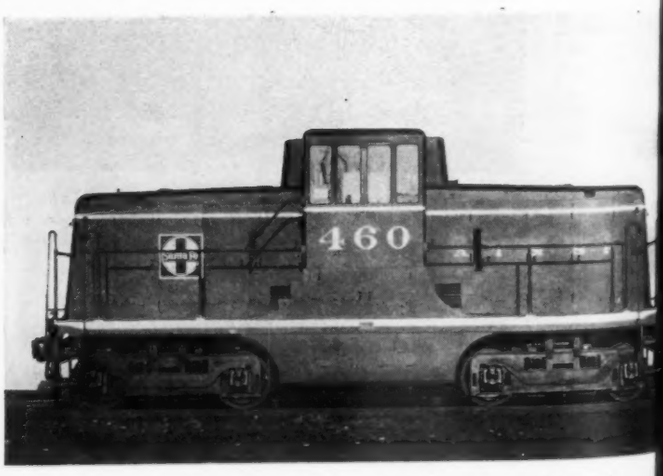
This view shows G-E 80-ton Diesel electric switching locomotive in service on a pier at the Naval Supply Depot, Oakland, California. This is a double end unit powered with a pair of Diesels.



Here are seen two G-E 25-ton, 150 hp. Diesel-electric yard-type locomotives handling a flat car load of steel at Marinship Yard, Sausalito, California.



Classification type G-E 70-ton Diesel-electric locomotive of 660 hp. used extensively in railroad freight yard service.

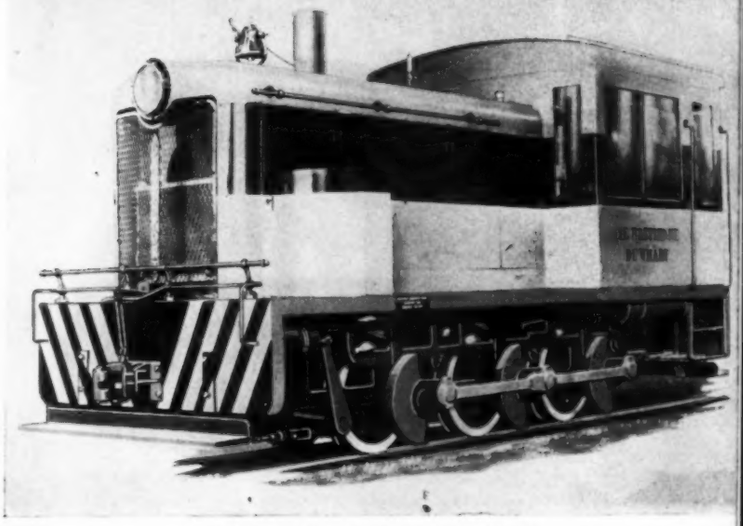


Built for the Santa Fe this G-E double end switching type Diesel-electric locomotive is a 44-tonner of 380 hp.

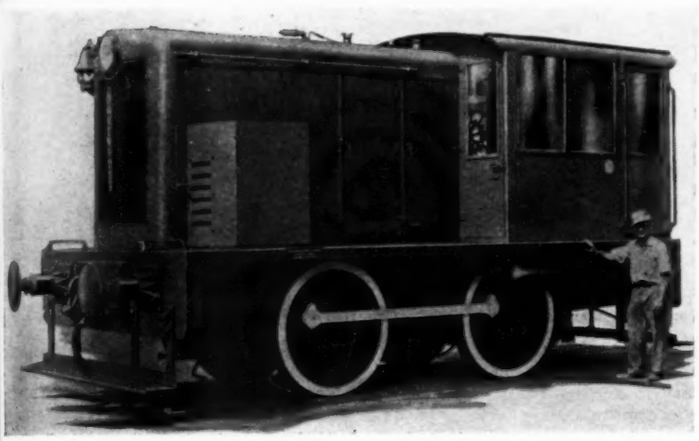
Another view at the Naval Supply Depot, Oakland, California, showing an 80-ton two engine G-E Diesel-electric locomotive in yard service.

G-E INDUSTRIAL AND SWITCHING TYPE DIESEL-ELECTRIC LOCOMOTIVES

DAVENPORT DIESEL-MECHANICAL SWITCHING TYPE LOCOMOTIVES

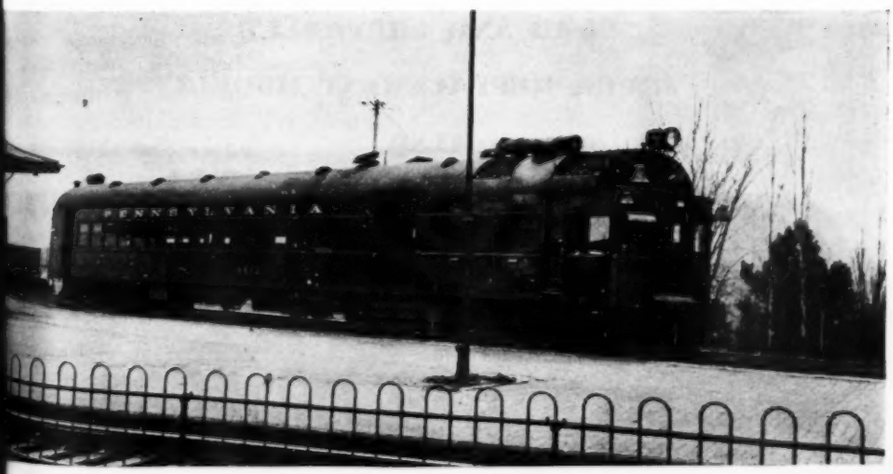


Designed for wharf service in Haiti this Davenport 25-ton Diesel mechanical locomotive is powered with a single Caterpillar 8-cylinder Diesel of 190 hp. rating.



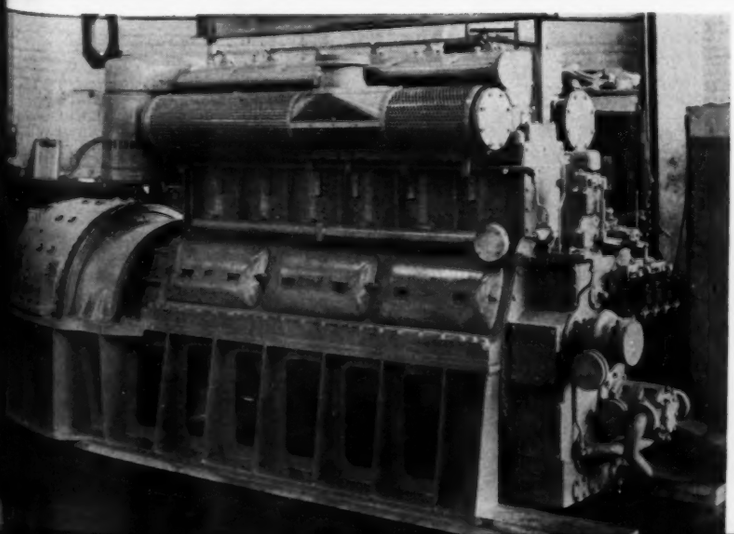
One of a fleet of 8 Davenport 33-ton Diesel mechanical locomotives, 60 in. gauge furnished to Russia for industrial and branch line service. These locomotives are powered with Caterpillar 8-cylinder, 135 hp. Diesels.

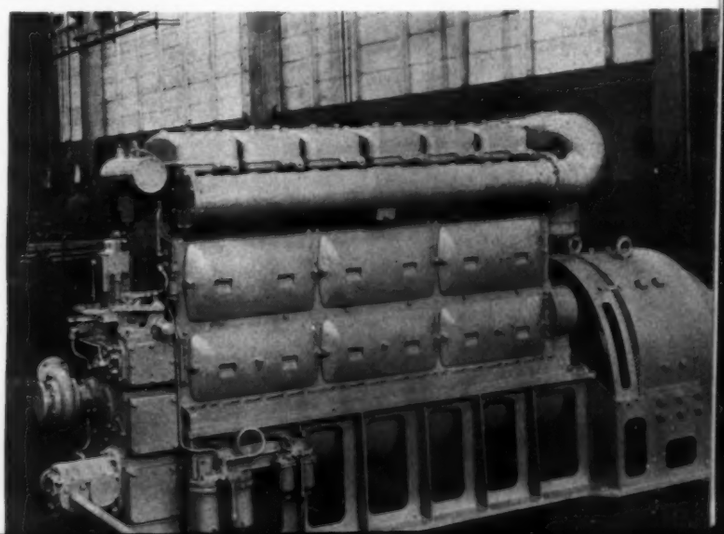
GENERAL MACHINERY RAILCAR DIESELS

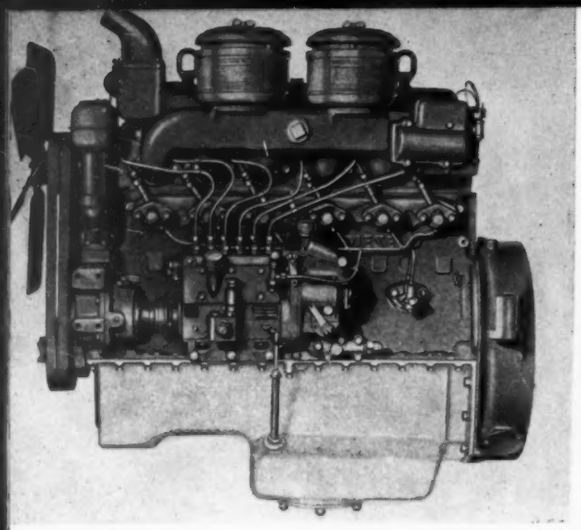


MANY interurban railcars, originally gasoline and oil powered, are now being repowered with Hamilton Diesels—six-cylinder, 8¼ x 12, 4-cycle engines. Two of the railroads now using this equipment are the Pennsylvania, Rock Island with two others in the process of change-over. Having established the utility of these railcar types as feeders the railroads now turn to Diesels for greater economy, higher percentage of availability and more power within the original space allotted to the prime mover.

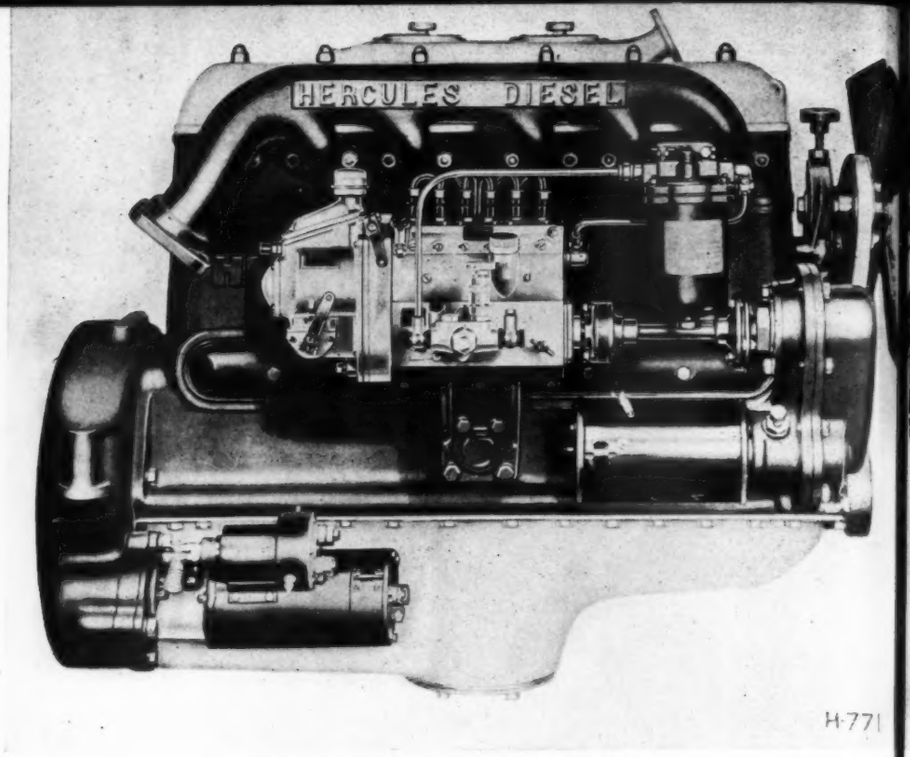
Left: One of the Pennsylvania Railcars which has been repowered with Hamilton, 6-cylinder, 4-cycle Diesel engines—two models of which are shown below.



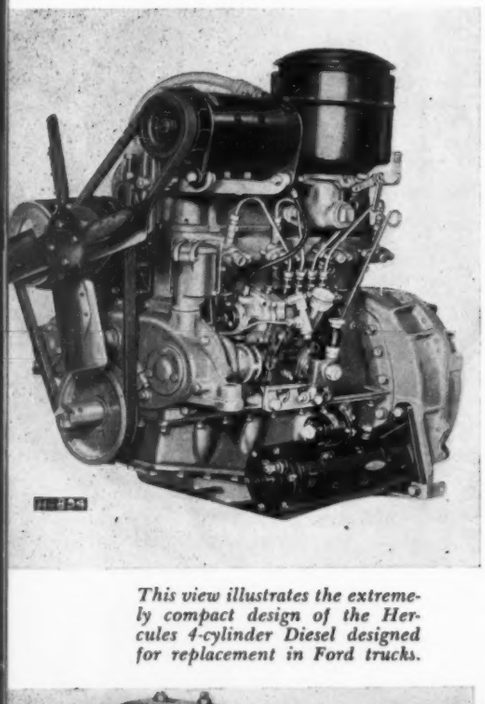




Injection side of the Hercules DWX, 6-cylinder automotive engine. This is a new model with Hercules, having been added to its line since the end of hostilities.



Hercules automotive type DRX truck Diesels are supplied in 2 bore sizes, 4⅜ in. and 4⅝ in. with ratings of 132 hp. and 150 hp., respectively, at 2200 rpm.



This view illustrates the extremely compact design of the Hercules 4-cylinder Diesel designed for replacement in Ford trucks.

HERCULES AUTOMOTIVE DIESELS

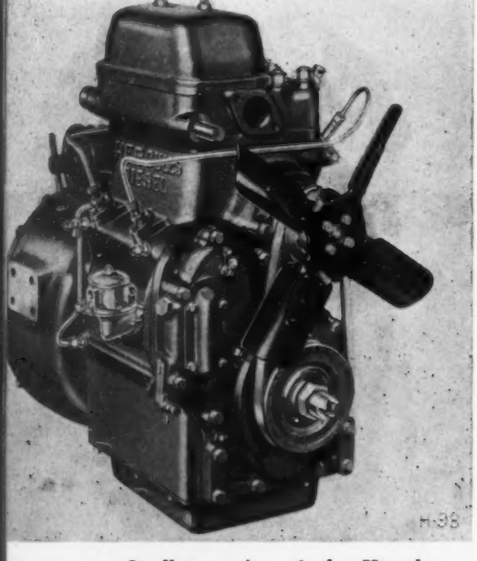
LINE FEATURES

FORD AND CHEVROLET

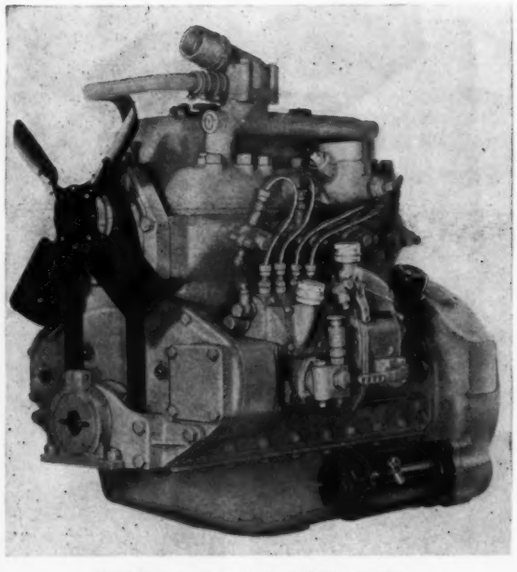
TRUCK REPLACEMENT MODELS

ALSO

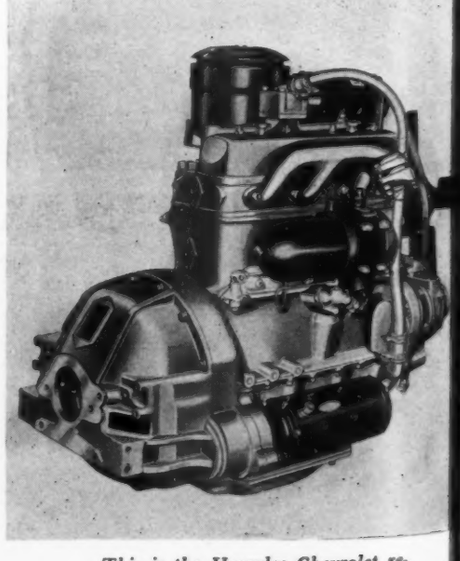
TWO NEW 4 AND 6-CYLINDER MODELS



Smallest version of the Hercules Diesel is this 2-cylinder, DIX model built in 4 in. and 4¼ in. bores, rated 27 hp. and 30 hp., respectively, at 1800 rpm.



Another new Diesel added to the Hercules line since the war is this 4-cylinder DIX model built in 2 bores, 3¼ in. and 3⅜ in. rated 46.5 hp. and 57 hp., respectively, at 3000 rpm.



This is the Hercules Chevrolet replacement Diesel complete with generator, starting motor and clutch housing.

For heavy-
6-cylinder
5½ in. b
respectivel

NOTE
Hercules a
Chevrolet
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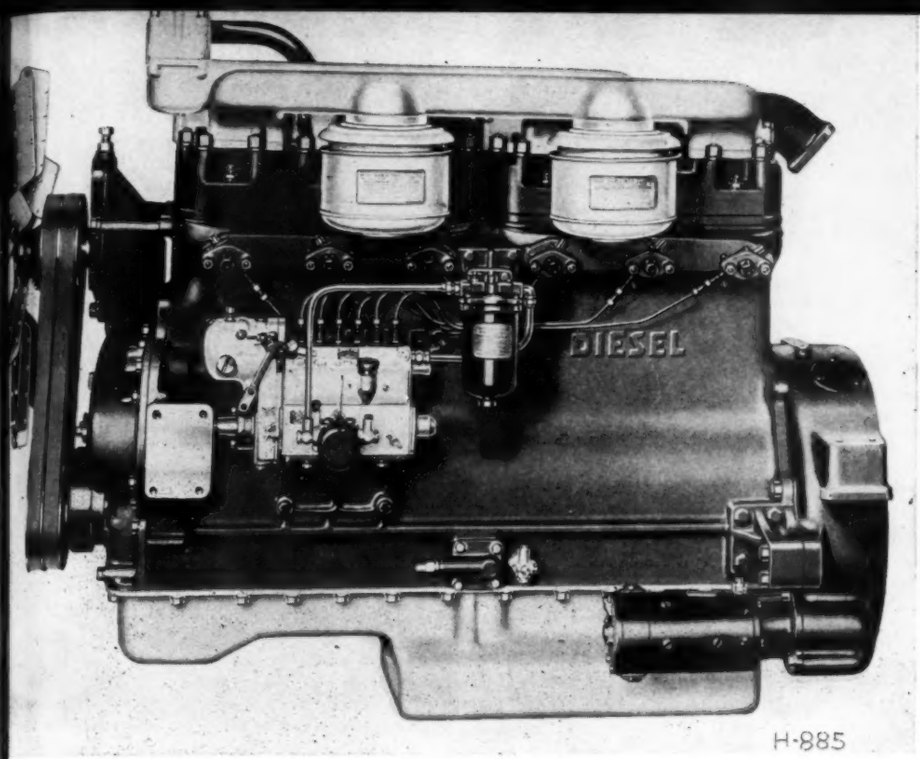
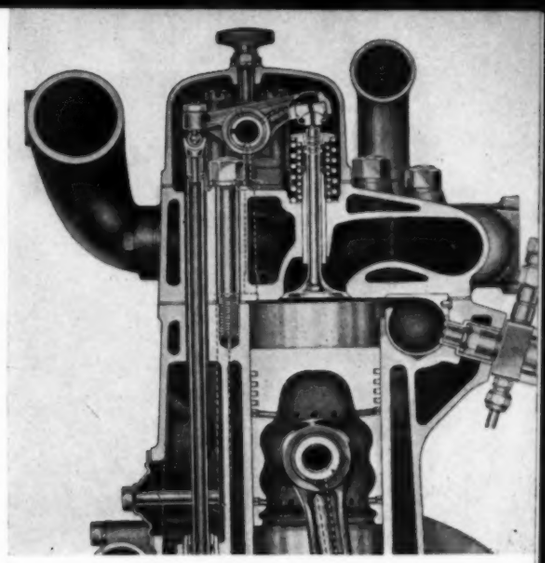
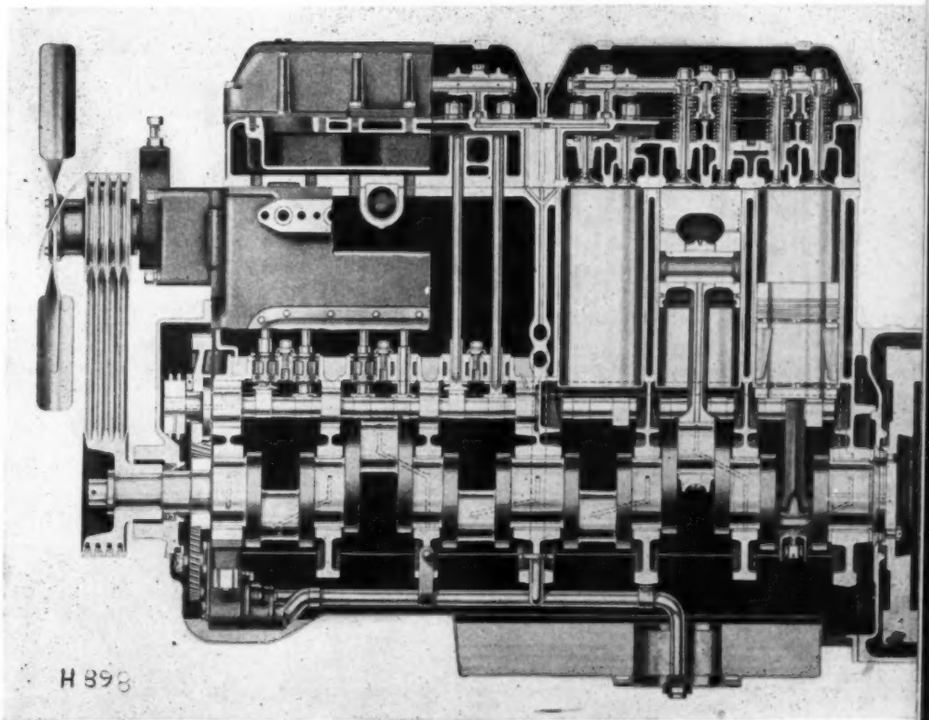


For heavy-duty automotive work, Hercules offers this 6-cylinder DFX Series Diesel in 2 sizes i.e. 5¼ in. and 5½ in. bores with 190 hp. and 204 hp. ratings, respectively at 2100 rpm.

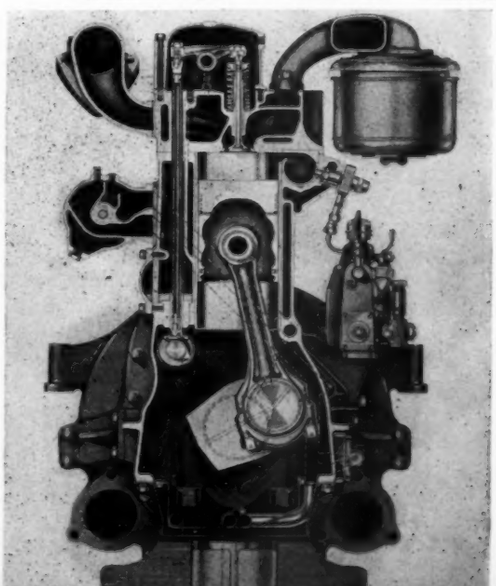


Sectional view showing arrangement of valve mechanism and combustion chamber used in all Hercules Diesels.



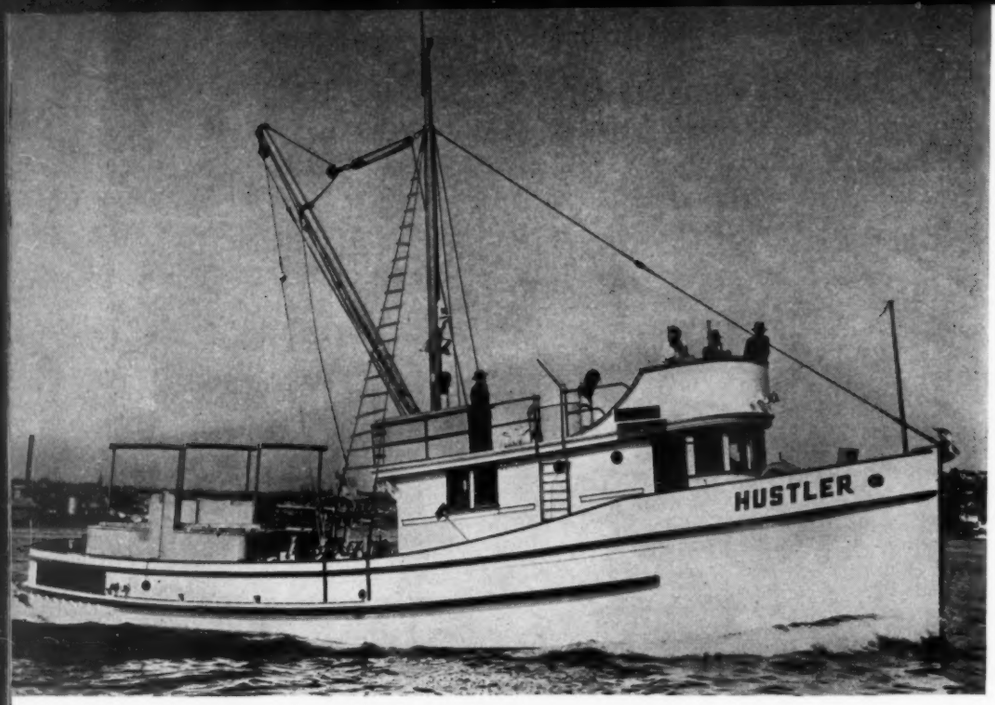
NOTEWORTHY in the versatile line of Hercules automotive Diesels are the Ford and Chevrolet truck replacement models. Designed to fit existing chassis with facility, these are remarkably compact units. The reduction of fire hazard in case of accident and the increased operating radius of the Diesel engined truck with the same tankage capacity as that of the gasoline powered vehicle are decided advantages. No sacrifice of power is made in Diesel truck engine replacement—moreover the Diesel's characteristic "lugging" ability makes possible the handling of heavy loads in one and sometimes two speeds higher than with gasoline engines of similar displacement. This distinctive quality of the Diesel engine results in marked fuel economy and prolonged gear life—it lightens the operator's burdens, too.

A feature of all Hercules Diesels is the Hercules combustion chamber which is located at the side of the cylinder bore. During the compression stroke air passes into the combustion chamber at a velocity fifty times crankshaft speed, thus creating extremely high turbulence. Fuel is injected into this swiftly revolving air resulting in a thorough mixture of fuel and oxygen and controlled rate of combustion.



Longitudinal view through the Hercules DFX Series Diesel engine.

Transverse section through the Hercules DFX Series Diesel.



Owned by R. T. Muchlinski, Milton, Washington, this 68 ft. tuna fisher makes 9.5 knots at 900 rpm. with its Caterpillar marine Diesel propulsion engine. This vessel has a fish capacity of 100,000 lbs. and is adaptable for trawling and halibut fishing.

Four big Caterpillar Diesel tractors are seen in this view ing on relocation of the P Highway 99E between Salem Albany, Oregon, fitted with Tourneau and Garwood scr These units handle 16 yard material per load.

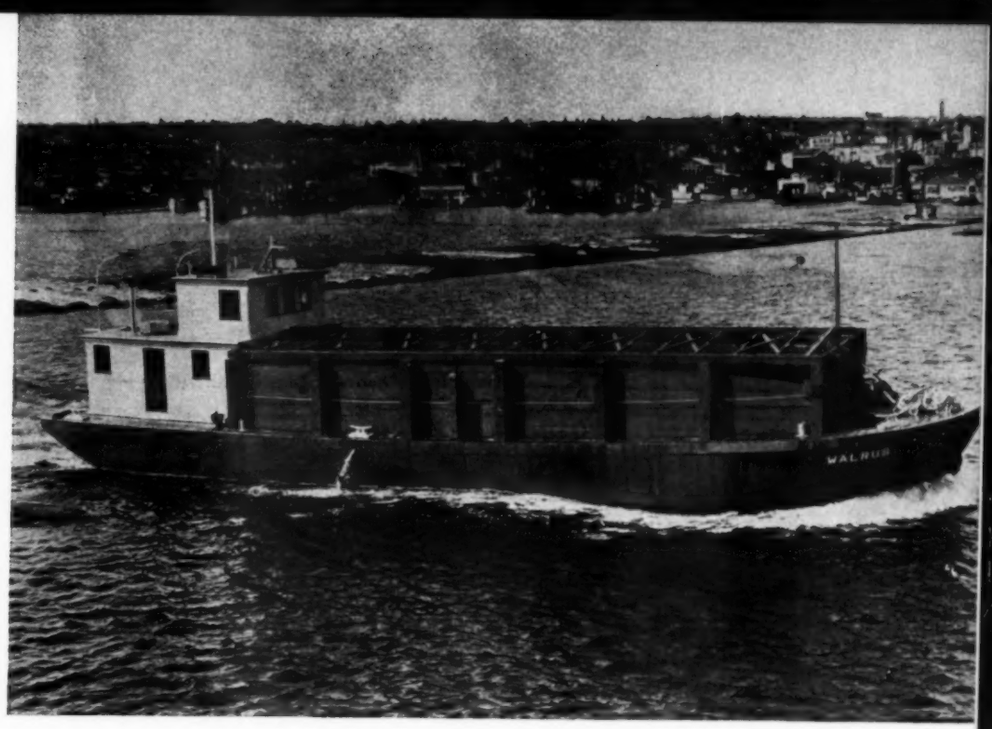
This Caterpillar D8 Diesel tractor fitted with LeTourneau bulldozer is seen stripping in a rock quarry in Atchison County, Kansas.

CATERPILLA ESI

In Hea ansp

LAND A A

Working on the Canton-Akron Memorial Airport in Ohio, this is one of a fleet of Caterpillar Diesel wheel-type tractors with Laplant-Choate scrapers. This equipment handles from 7 to 8 yds. per load.



This 76 ft. power scow, owned by Alaska Packers Association, has a 70-ton capacity and is powered with two Caterpillar marine Diesels. The scow operates between Seattle and the Naknek Salmon Cannery, Bristol Bay, Alaska.

ESELS

ansportation . . .

A levee-type wagon hauled by Caterpillar Diesel tractor is seen here being pressed into service on a highway job.

A Caterpillar wheel-type Diesel tractor unit with 2-wheel wagon at work on a levee enlarging project near Joiner, Arkansas. This unit hauls 10½ yds. of material per load.

Further evidence of the versatility of Caterpillar Diesel tractors is seen in this view where the tractor is fitted with a Trackson Traxcavator loading rock dust from stockpile in a Kansas quarry.

ANOTHER ELECTRIC RAILROAD JUNKED!

By CHARLES F. A. MANN

No inconsiderable portion of the recent thunder created by the Bonneville Power Administration with its scheme to spend a billion dollars electrifying 5,000 miles of Western trunklines was probably dissipated when the booming, rejuvenated little Oregon Electric Railway Company's 142-mile Portland-Eugene electric line suddenly blossomed out as a 100% Diesel railroad, and sold its overhead wires, transformers and electric motors to a Portland junk dealer.

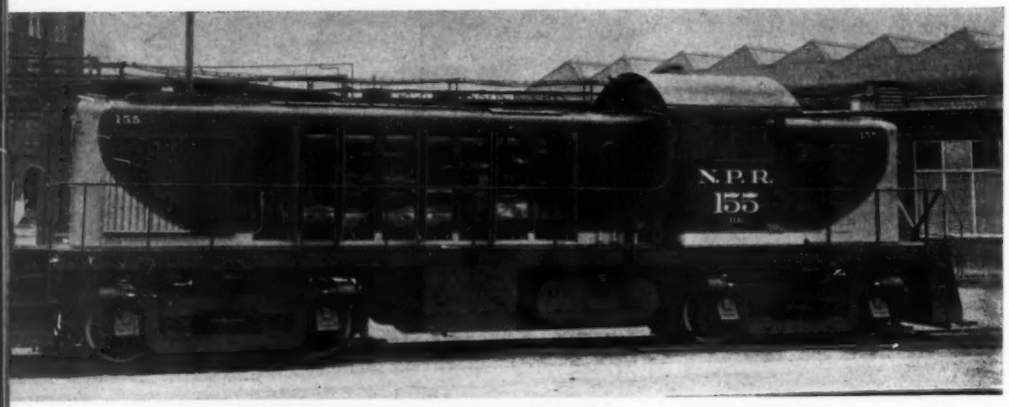
Practically the same week the Bonneville ballyhoo was turned loose, Oregon Electric quietly folded its electrification, which, mind you, terminates only about 40 miles from Bonneville powerhouse, and cut its busy fleet of 16 hybrid electric motors to a modest group of six 1,000 hp. Alco road-switcher Diesels, and thereby cut costs more than 60%; avoided, by spending $500,000 for the 6 Diesels, a $3,000,000 investment to refurbish and re-equip its electric system; and redoubled its vital pool of terminal switching power for the Portland yard.

T. F. (Tom) Dixon, Vice President and General Manager of this company, is better known in U. S. Railway circles as boss man of the enterprising, somewhat complicated, Spokane, Portland & Seattle Railway Co., 900 mile key network of four small companies, owned lock stock and barrel by two equal parents, the Great Northern and Northern Pacific, kingpin pair in the world's largest privately owned railroad empire, the 26,000 mile N.P.-G.N.-Burlington System, well-known to practically everybody.

This little company is practically the nerve center west of Spokane, for its two owners. It gives direct access down the marvelous water level grade to Portland and Astoria, Oregon, from connections at Spokane with the N.P. & G.N. One of its children, the Oregon Trunk Railway, is a vital 151-mile connecting link between Wishram, on the Columbia River, and Bend Oregon, so that the Great Northern can enter California from the North via its own Klamath Division trackage, to the Western Pacific Railroad connection at Bieber, Cal. Oregon Electric, started near the turn of this century, became the tool whereby James J. Hill, the Empire Builder, fought tough old E. H. Harriman for a Portland-San Francisco route, as far South as Eugene. The battle ended with Oregon Electric becoming a snooty electric interurban railroad with as many as 28 electric passenger trains daily scheduled out of Portland.

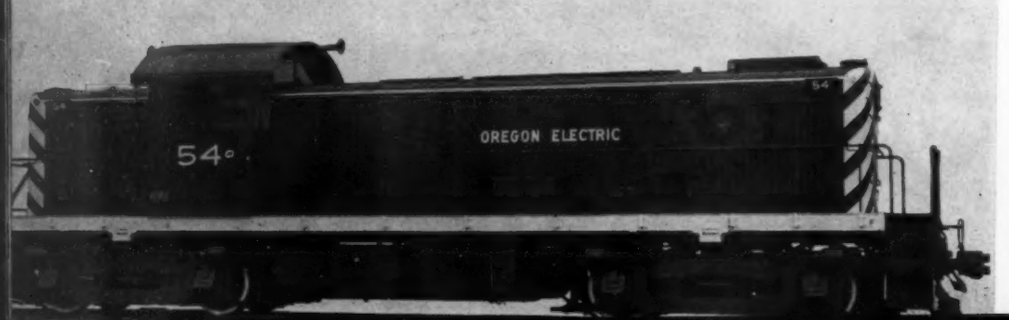
The decline of passenger traffic, lagging only a few years behind the rise of Willamette Valley freight traffic, converted, by 1931, Oregon Electric into a primary freight feeder for the Sub-Parent SP&S, and the Principal Parents, N.P.-G.N. So when Oregon Electric scraps in one gentle swoop, so to speak, its entire electrified line from Portland to Eugene, to improve freight service to the rapidly industrializing Willamette Valley, there must be a sound economic reason.

However, after listening to Mr. Dixon discuss his problems, we can, for the first time, save our readers a lot of detailed statistics and discussion, by simply saying that the whole picture here was so ideally set up for Diesel, that even an unsharpened pencil in the hands of an amateur statistician readily showed that the overall economics of Dieselization ran so far ahead of electrification, that the owners simply had no choice in the matter.



Here are seen 3 generations of ownership and Diesel operation:—above, an Alco unit of the grandparent, Northern Pacific Railroad.

Above: A later Alco Diesel unit belonging to the parent company and below, newest Alco Diesel locomotive of the present generation.



Diesel locomotive No. 230 on the Oregon Electric near Eugene, Oregon.

Actually, if electric power were supplied Oregon Electric for one mill per kilowatt, by either Portland Electric or Bonneville Dam, it would still cost more to keep using this "cheap" electricity at the end of the year, than to scrap it and buy Diesels. So they did—and for about the same reasons that another little electrified stepchild up in Spokane, the SCAP Line into the Palouse Wheat Belt, "went Diesel" three years ago, as our readers may remember.

For one thing, Oregon Electric, as it grew into a vital freight line, had to start running long spur tracks to sawmills, plywood plants, etc. This meant bare wire in a high fire-hazard industrial area. Winter rainfall and humidity create terrific line losses. Substations originally built for passenger trains got excessively hot on 1200 ton freight trains. Overhead wires, on cedar poles, needed replacing by the thousands.

Copper wasn't heavy enough. The load factor kept transmission and distribution losses almost as great as the Sunday power load for a freight train. As freight loads increased, it meant new steel and costly rail bonding if electrification was to continue. When your Diesel freight train from Eugene got back to Portland, the electric locomotives sat around doing nothing while busy yards were crammed with cars to be shifted. Portland chased Oregon Electric's freight line off its industrial streets, and forced a 20 mile detour by steam power to connect up with the electric line. You started out with steam and changed to electricity. And so on and on into vital economic factors that had little or nothing to do with the cheapness of Northwest electric power.

The Parent Company, SP & S operates 16 Diesel switchers. The new fleet of 1,000 hp. Alco road-switchers, when not busy, can work in this switcher pool, further reduce smoke nuisance in the heart of Portland. The sheer inflexibility of an electrified railroad stared Oregon Electric square in the face in 1945 and that alone proved enough basis to junk its electrification. Interestingly, it is reported that Oregon Electric found out that the price quoted on new, larger electrics of identical power to the Alco Diesels, was almost exactly that quoted for the Diesels!

Nationally, everywhere, the picture is the same. There are but five railroads in the United States that can use electrification to advantage —where 24 hour traffic density is so even and so great, that you can reduce extraneous costs to a minimum, and derive all extraneous benefits to their outer maximum. And if Diesel costs per car or 1,000 gross-ton-mile keep coming down any more, these five will be reduced to but two.

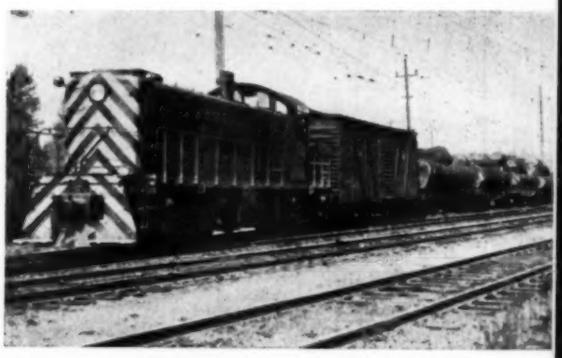
The six Alco Diesel road-switchers are their standard type, having an overall weight of 238,000 lbs. on two four-wheel trucks, all power trucks, and are equipped with 6 cylinder 12½ x 13 in. Alco Diesels, with Buchi turbochargers, G.E. generators and traction motors and 4:69 gear ratio. Forty inch wheels are used and total rigid wheelbase is but 9 ft. 4 in. and overall length is 40 ft. 4 inches. Tractive effort at starting is 71,400 lbs. and 34,000 lbs. continuous rating at 8 mph. Maximum speed is 60 mph.

From 800 to 1200 tons make up a train, mostly operated out of Eugene and Portland on an early evening-midnight arrival basis, variable with the amount of switching done en-route. Some of the trains only run as far as Albany.

Other times, as conditions warrant, heavy log hauls from the stiff grades on the Vernonia line and the Glenwood line are run. At other times the Forest Grove, Sweet Home and Dollar branches, also heavy logging runs, are Diesel operated.

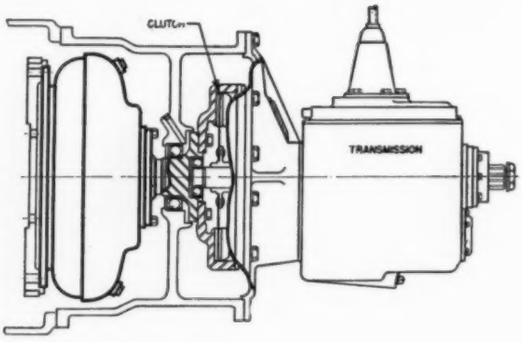
Generally from 2 to 3 regular daily freights are operated each way between Portland-Albany-Eugene. Oddly, despite the average levelness of the route to Eugene, there is a 1.5% maximum grade from United Junction to Rockton, about 5 miles up and 5 down, that tests the Diesels each way. Once a bottleneck with electric power, it is now a "Duck Soup" proposition for the Diesels, as they can overload them on this stretch. The real test, however is the 7½ mile stretch of 2.3% grade between Manning and Tophill on the Vernonia Branch, where log trains are often cut in half to make this run.

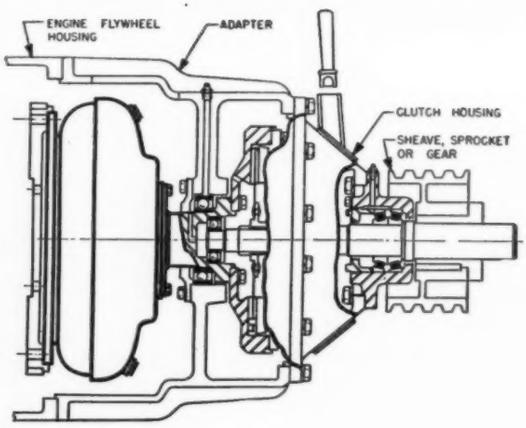
After one full year's operation, DIESEL PROGRESS has been promised some interesting operating data on this Diesel operation. With this, and the fact that the sawmill and plywood industry is moving down to the Willamette Valley, which means ever increasing traffic, a vital economic study in Diesel railroading should be obtainable that perhaps will guide other Short Line operators into the more efficient way of railroading.



A log train approaching Portland, Oregon.

Diesel-electric No. 52 hauling general freight near Albany, Oregon.

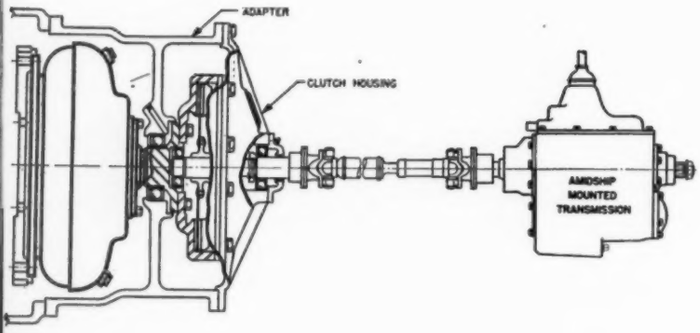




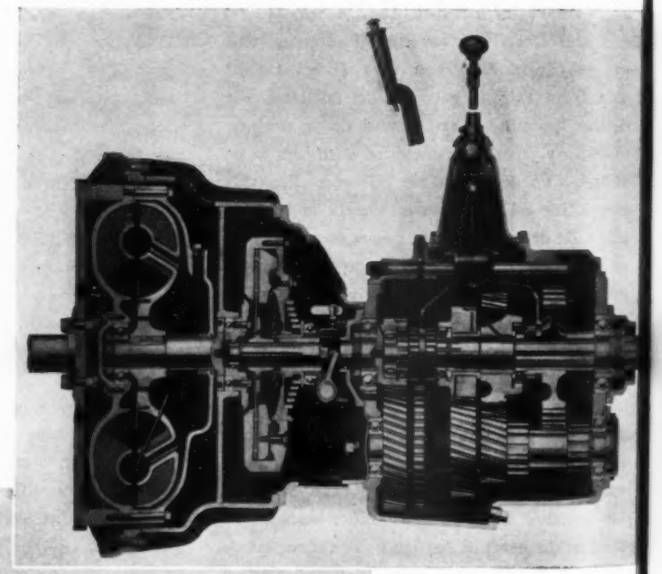
Upper left: Diagram showing arrangement of fluid drive, friction clutch and conventional transmission, widely used in heavy duty trucks.

Above: Similar arrangement of fluid drive and clutch but with the transmission being replaced by V-belt sheave.

Left: Diagram showing arrangement of traction-type fluid drive with clutch and midship-mounted transmission.



TRACTIVE-TYPE HYDRAULIC COUPLINGS



Cross-section of traction-type hydraulic coupling with clutch and transmission for heavy-duty automotive service. Note the fluid drive protects both engine and driving gear since the hydraulic coupling is incapable of transmitting sudden shocks in either direction.

Le Tourneau "Tournapull" fitted with 2 hydraulic couplings connected to two 200 hp. Diesels.

New Air-Maze Filter-Silencer Engineered *for* TURBOCHARGED DIESELS!

★ INSURES EFFICIENT FILTRATION

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★ OPERATES AT ALL SPEED RANGES

AIR-MAZE TYPE E FILTER-SILENCER OFFERS 4 ADVANTAGES!

- Permanent, cleanable, all-metal filter element of scientific design.
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Typical of the more than 3000 types and sizes of filters engineered by Air-Maze during the past 20 years—the Type E is a *specific* problem solved by *application engineering* and *research.* Let our engineers work with you in the solution of your particular filtration problem.

AIR-MAZE CORPORATION • CLEVELAND 5, OHIO

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IF IT USES AIR . . . USE

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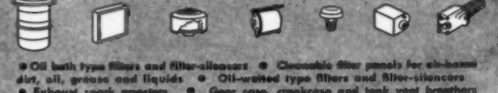
ENGINEERED AIR FILTRATION



• Oil bath type filters and filter-silencers • Cleanable filter panels for air-borne dirt, oil, grease and liquids • Oil-wetted type filters and filter-silencers • Exhaust spark arresters • Gear case, crankcase and tank vent breathers • Oil-separators for engine crankcases • Full-flow type cleanable oil filters

3 Models Available

ENGINE LUBRICATED

Direct-mounted model designed with oil connections to turbocharger when lubricated by engine lubricating system.

TANK LUBRICATED

Direct-mounted model where turbocharger is independently lubricated by its own tank. Special pipe connections are furnished.

REMOTE MOUNTED

For installation at a remote point from the engine such as outside the engine cab or building.

Send for this New Catalog!

Special new catalog gives you complete information on all three models, including specification table and technical data designed for quick, ready reference. Send for yours today. Ask for Catalog No. EFS-246.

Conducted by

R. L. GREGORY

Chief Engineer, Municipal Water and Light Plant, Hillsdale, Michigan

SEALED POWER

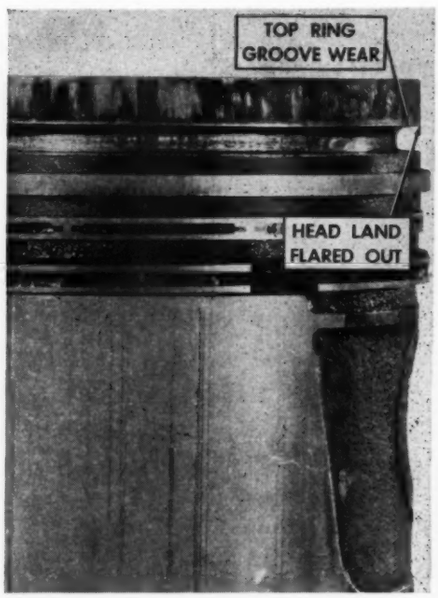
Offers Answer to Top Ring Groove Wear

SEALED Power Corporation has introduced to distributors a new development which is claimed to be an improvement over any previous answer to wear in the top ring groove of pistons. This consists of a "contracting groove insert" and a regrooving tool which cuts a recess for the insert at the same time that it trues up and widens the top groove.

As is well known to repairmen, this top groove wears faster than other grooves because it is exposed to the most intense heat, receives the least lubrication, and is subject to dust coming through the intake. Slight wear in the ring groove rapidly grows into extreme wear due to the pounding of the loose ring.

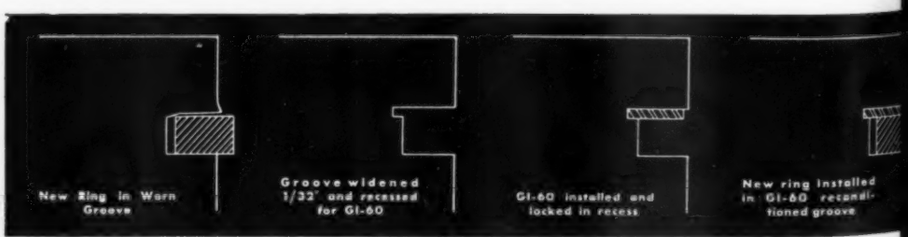
Sealed Power's regrooving tool makes the worn groove 1/32 in. wider than the original groove and cuts at the same operation a recess 1/32 in. wide at the top of the groove. Into this recess is then fitted the "contracting groove insert," which anchors itself permanently. The insert is also made with a slight "dish" and is installed with the dished side up, so that it hugs the top side of the groove and becomes an integral part of the piston. It can't float about like a loose "spacer," but rather forms a spring-steel armor at the base of the top land, which resists wear better than either aluminum alloy or cast iron.

The effectiveness of this new insert has been proved in laboratory and field tests by large fleet owners extending over a year. It is equally effective in new pistons.



View of a worn piston showing the effect of excessive wear in top ring groove.

View showing piston repaired by the Sealed Power method which trues up the top ring groove and provides a groove insert, enlarged.


New Ring in Worn Groove
Groove widened 1/32" and recessed for GI-60
GI-60 installed and locked in recess
New ring installed in GI-60 reconditioned groove

Series of sketches showing condition of top ring groove before repair and the steps taken in effecting repair.

ingle-unit

An example of Baldwin pioneering in the field of railroad motive power is this 3000 hp single-unit diesel-electric, the first of its kind in the world.

Built for the Seaboard Air Line Railway, it will help to expedite the shipment of fresh fruits and winter vegetables from the far reaches of Florida to northern markets.

This new locomotive is part of a complete line of Baldwin-Westinghouse diesel-electrics for all classes of service.

BALDWIN-

THE BALDWIN GROUP

Westinghouse

Turkish Distributor Seeks Diesel Engine Line

SUAT KARAOSMAN, General Manager of Safir Genel Ticaret, Taksim, Ceylan Han No. 25, Istanbul, Turkey, is keenly interested in opening up correspondence with manufacturers of Diesel engines and Diesel engine accessories who are interested in arranging for distribution in Turkey. This concern is well organized, well financed and has a good standing. We highly recommend them to our readers.

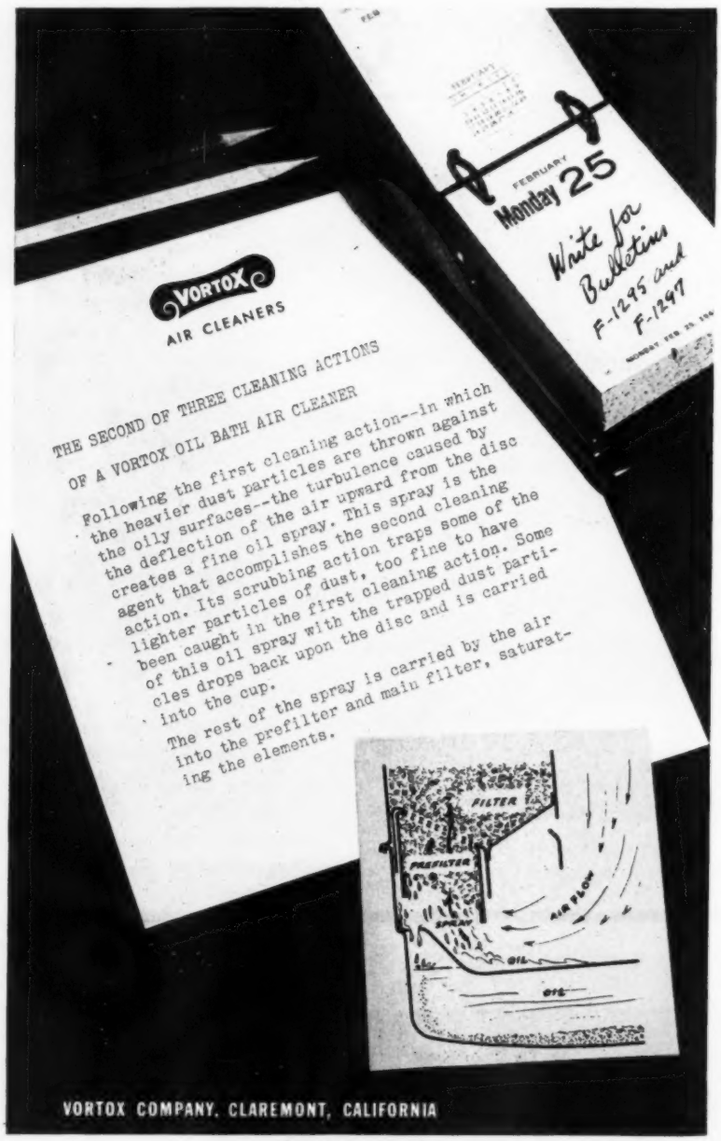
Perfect Circle Announces Executive Changes

MAJOR changes in the executive personnel of the Sales Division, were recently announced by Don H. Teetor, vice president in charge of sales of The Perfect Circle Company.

George W. Stout has been appointed Sales Promotion Manager, a new position created recently by the company which embraces all phases of Perfect Circle merchandising policies and procedure. Mr. Stout is well qualified to accept the responsibilities of the position, having served as advertising and publicity manager for most of his twenty-one years with the company.

Lt. Comdr. Herman C. Teetor, now on terminal leave, fills the position made vacant by Mr. Stout. Mr. Teetor, who began his career with Perfect Circle in 1927, held various executive assignments in the Sales Division prior to his acceptance of a commission in the Navy in 1942. Mr. Teetor is a director of the company.

Also announced was the appointment of John C. Senn as assistant advertising manager, a post he held prior to his entry into the Army Air Corps in 1942. Major Senn, now on terminal leave will assume his new duties as soon as his final release from the Armed Forces becomes effective.


VORTOX
AIR CLEANERS
THE SECOND OF THREE CLEANING ACTIONS
OF A VORTOX OIL BATH AIR CLEANER
Following the first cleaning action--in which the heavier dust particles are thrown against the oily surfaces--the turbulence caused by the deflection of the air upward from the disc creates a fine oil spray. This spray is the agent that accomplishes the second cleaning action. Its scrubbing action traps some of the lighter particles of dust, too fine to have been caught in the first cleaning action. Some of this oil spray with the trapped dust particles drops back upon the disc and is carried into the cup.
The rest of the spray is carried by the air into the prefilter and main filter, saturating the elements.
FEBRUARY
Monday 25
Write for Bulletins F-1295 and F-1297
FILTER
PREFILTER
AIR FLOW
OIL
VORTOX COMPANY, CLAREMONT, CALIFORNIA

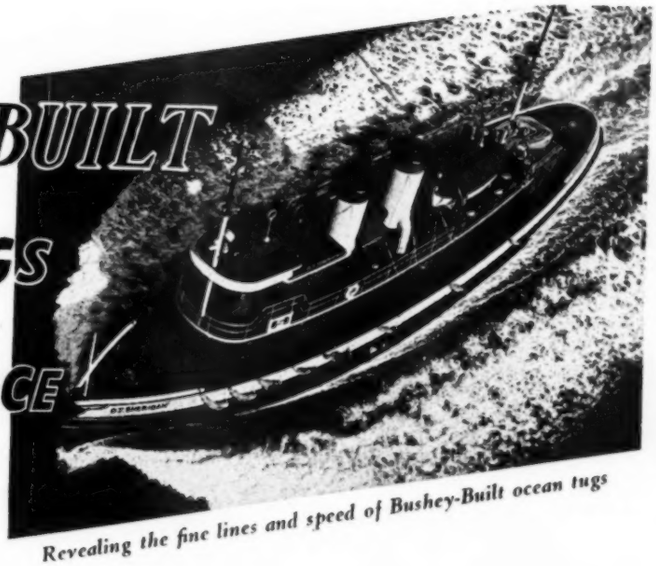
Leece-Neville Elects S. Floyd Stewart

S. FLOYD STEWART has been elected Vice President, in Charge of Engineering, by the Board of Directors of The Leece-Neville Company. Announcement of the appointment was made by B. M. Leece, President of the concern.

S. Floyd Stewart

Mr. Stewart joined Leece-Neville as a Research Engineer in 1936, becoming Chief Engineer in 1941. He received a B.S. degree from Washington University in 1922, and followed this with graduate work at Massachusetts Institute of Technology, receiving an S.M. degree in 1924. Upon graduation from M.I.T., he completed the test course at The General Electric Company, which led to a position in the Motor Engineering Department. He later joined the engineering staff of the Wagner Electric Corporation, and before coming to Leece-Neville was associated with the Jensen Company of Chicago.

Bushey-BUILT DIESEL TUGS FOR USE IN PEACE

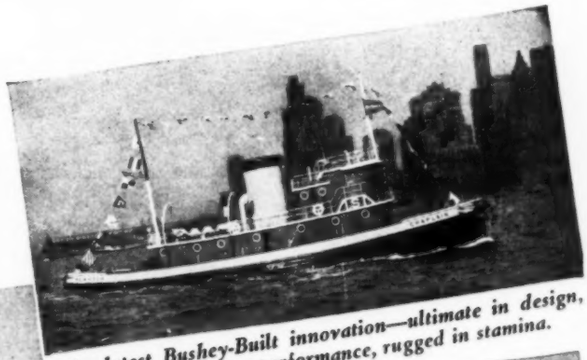


Revealing the fine lines and speed of Bushey-Built ocean tugs

• Today's outstanding modern diesel tugs are Bushey-Built.

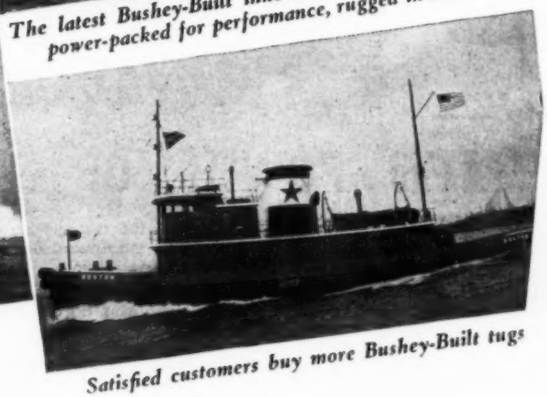
These tugs embody pioneering, ahead-of-the-field features that have made Bushey preeminent in the construction of this type of vessel—in the knowledge and installation of diesel engines for exacting towing and transportation requirements—in the ability to contribute maximum, economical, dependable performance over the longest period of operation.

Only the best is good enough for owners and operators of Bushey-Built Tugs—to whom outstanding transportation and towing performance is a "must."



The latest Bushey-Built innovation—ultimate in design, power-packed for performance, rugged in stamina.

Bushey-Built for greatest use — flexibility and economy of operation



Satisfied customers buy more Bushey-Built tugs

IRA S. BUSHEY AND SONS, INC.

Dry Docks and Shipyards

FOOT OF COURT ST. BROOKLYN, N. Y.

Bowser to Make Torrington Lubricator

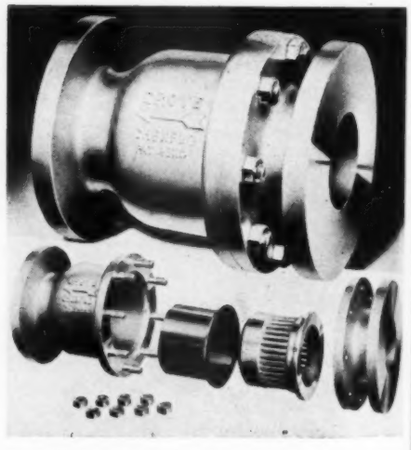
THE complete inventory of parts and finished units and the exclusive manufacturing rights of Torrington Lubricators have been acquired from the Torrington Manufacturing Company, by Bowser, Inc. The announcement was made by Fred S. Ehrman, General Sales Manager of Bowser, Inc. Lubrication equipment for industrial machinery has long been a major item with Bowser, Inc. and, according to Mr. Ehrman, the Torrington line will be manufactured at the Fort Wayne plant and distributed through the entire Bowser system of regional sales and service branches and warehouses, supplementing their regular line of lubrication equipment.

Batteries for Diesel Locomotive Service

STORAGE batteries for Diesel locomotive service are featured in Catalog No. 700 recently published by Gould. The recognized advantages of Diesel engines, and the high performance standards required of batteries for Diesel service are discussed. The adaptability of Kathanode Glassklad construction to Diesel requirements is explained and both wood trays and monobloc containers are described. The catalog tells "The Story of Kathanode" and gives details of the battery's construction. Illustrations of the Kathanode grid and characteristic discharge curves are also shown. Several pages of technical data give the specifications of batteries available for Diesel service. Two informative articles, "The Theory of the Lead Acid Storage Battery" and "Care and Maintenance of Your Battery" complete the catalog. Copies may be obtained from the Gould Storage Battery Corporation, Depew, N. Y.

New Grove Check Valve

THE new Grove Chexflo valve uses no metallic moving parts. Operation is effected by a synthetic rubber tube, stretched over a slotted, cup-shaped metal core, which expands to open and contracts to close. Due to the fact that this expansible tube closes instantly on balanced flow, prior to the commencement of back flow, there is never any tendency to establish pressure impulses, shock or water hammer through the flow line



Exploded view of Chexflo valve (bottom insert) shows simplicity of its elements.

The flexive tube possesses a uniform and constant spring rate which avoids inertia being set up to cause operation beyond flow requirements. It likewise, improves in service due to the fact that "flexing" adds life to rubber. Because of its self-compensating and wear resistant factors this unit is particularly suited for handling even the most highly corrosive and erosive air, gases or liquids. Full details contained in Bulletin 610 are available on request to Grove Regulator Company, 6495 Green Street at 65th, Oakland 8, California.

FULLER POWER FOR PEACE

For 85 years — as the world's oldest refiner — the makers of famous Be Square products have assisted in the development of many significant changes and improvements in the refining and manufacture of petroleum lubricants.

While furnishing high standard lubricants to our Armed Forces, Be Square perfected many new processes and manufacturing techniques to give the production of peacetime America finer, more efficient Diesel lubricants.

BE SQUARE HEAVY DUTY DIESEL ENGINE OILS

FULL Diesel power means MAXIMUM KILOWATT HOURS AT MINIMUM MAINTENANCE COST. For your Diesels to maintain such operating records, specify BE SQUARE HEAVY DUTY DIESEL ENGINE OILS — manufactured with IMPROVED ADDITIVES to resist ring-sticking, sludge, corrosion, scuffing and hard-carbon deposits.

Be Square lubricants are tested under high temperature operating conditions which determine their OXIDATION STABILITY, CORROSION CHARACTERISTICS, and OVERALL LUBRICATING VALUES. Many satisfied customers testify to the extra margin of protection assured by BE SQUARE DIESEL LUBRICANTS.

"BE SQUARE TO YOUR ENGINE"

Consultation Service—
Our experienced engineering services are available to your plant management without cost or obligation.

BARECO OIL CO.
BOX 2009 — TULSA, OKLA.
Barnsdall, Okla. — refineries — Wichita, Kansas

Minimum fuel consumption

WITH THE EX-CELL-O DIESEL FUEL INJECTION PUMP

Designed for High-Speed Diesels Requiring Automatic Timing and Torque Control.
EX-CELL-O DETROIT-U.S.A.
Simplified field service — all units are replaceable.

● **GET MINIMUM FUEL CONSUMPTION** from your Diesel engines and maximum power output at all speeds with the EX-CELL-O Type KB Fuel Injection Pump. ***Fuel injection timing is automatically advanced in relation to engine speed.*** It is this EX-CELL-O feature of "speed responsive timing control" which gives you unusually smooth, economical operation and longer life for vital engine parts. WRITE US NOW FOR COMPLETE INFORMATION.

EX-CELL-O XLO

Fuel Injection Division

EX-CELL-O CORPORATION ★ ★ DETROIT 6, MICHIGAN

Parker Announces New Sealing Compound

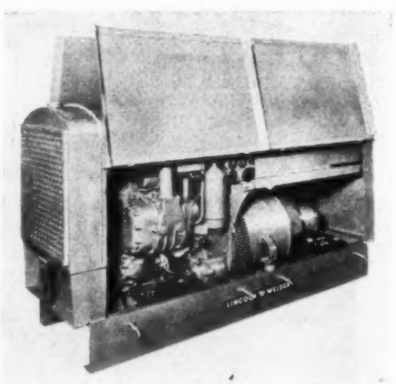
THE development of a general-purpose thread and gasket sealing compound, to be known as Uniseal, is announced by Parker Appliance Company. A new organic product evolved by the Parker Research and Special Products Division, Uniseal produces a high efficiency seal which is proof against air, water, steam, gas, gasoline, oil, hydraulic fluids, and the aromatics. Thorough testing has shown virtual insolubility in gasoline, kerosene, Stoddard solvent, benzene, xylene, carbon disulfide, the ketones, acetones and the various aromatic aviation fuels.

The Parker product is a paste of uniform consistency, containing no free metallic particles which might set up corrosion due to galvanic action, or other additives subject to washing out. The compound flows smoothly to form ribbon gaskets, and blends readily with cut gasket material.

Uniseal possesses good anti-sieze characteristics which aid in the assembly of threaded fittings. Solubility in alcohol and carbon tetrachloride simplifies any cleanup which might be necessary. Dis-assembly and rearrangement of work on which the new compound has been used is easier, too, as the seal breaks cleanly with the application of minimum force. Effective under severe conditions of vibration, and at temperatures above 300°F. For full particulars write Parker Appliance Company, 17325 Euclid Ave., Cleveland 12, Ohio.

New Diesel-Driven Welder Announced by Lincoln

A NEW Diesel engine driven welder of 300-ampere capacity specially made for use in locations where electric power is not available, or not economical, is announced by the Lincoln Electric Company.



New Lincoln self-contained Diesel "Shield-Arc" welder.

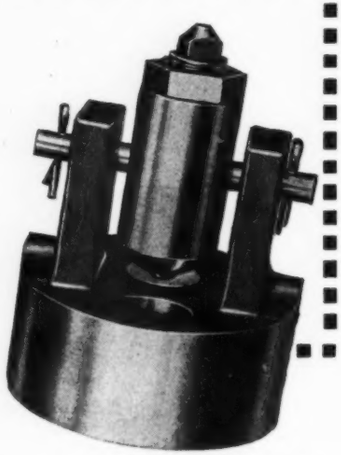
Powered by a two-cycle General Motors Diesel engine, this addition to the Lincoln "Shield-Arc" welder line cuts fuel costs up to 86 per cent, depending upon the price of fuel oil used. In many cases, total savings, including such items as transportation of fuel, losses, etc., are as high as 40c per hour.

Engine features include a simplified fuel arrangement with complete fuel filtering system, and many other special features which contribute to the efficiency and service economy of the engine.

Equipped with Dual Continuous Control, this Lincoln welder permits the operator to select any type of arc and any arc intensity to suit the job. This feature improves the speed, quality, and ease of welding. Also, because of its fine adjustment, it makes possible a much wider range of application—both as to thickness and classes of metals and alloys. Other features of the welding generator include separate excitation and laminated magnetic circuit for a smoother, more productive arc at all current values.

EXTRA Protection for Diesel Engines

WITH THE BEARING WATCHDOG SYSTEM



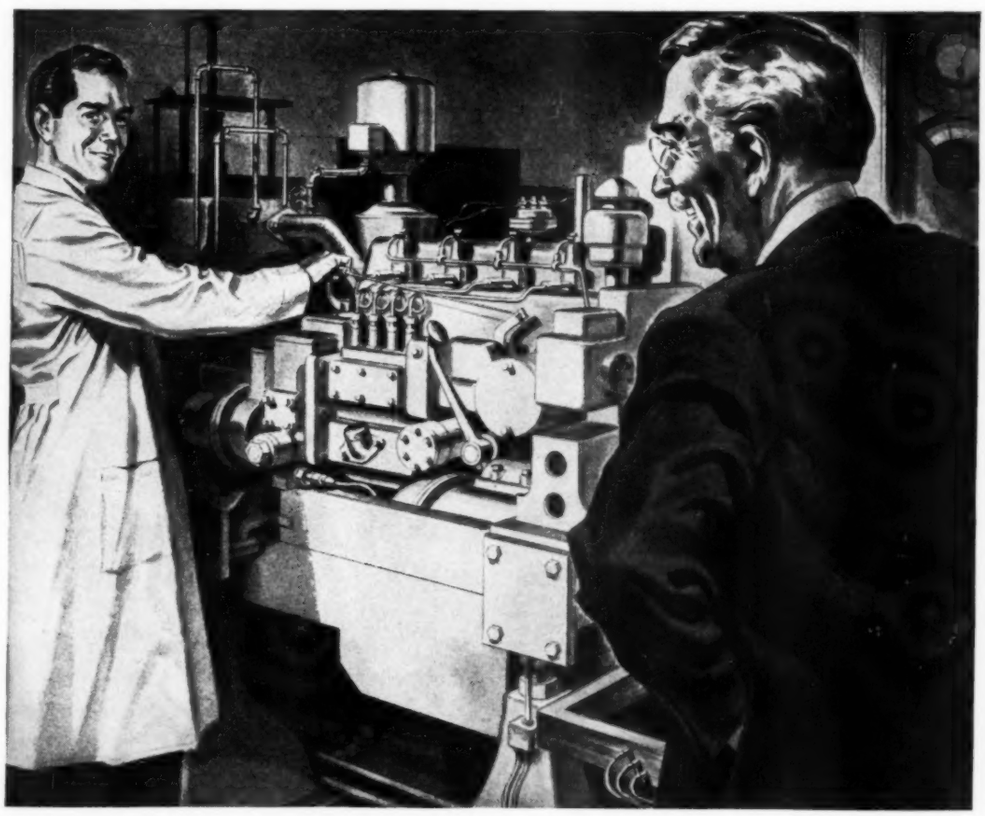
The Bearing Watchdog trip lever literally "measures" the wear of Diesel bearings. With the Bearing Watchdog System installed in an engine (one Watchdog below each connecting rod throw) wear beyond predetermined standard, or shell-out of connecting rod and main bearings can be detected in plenty of time to prevent damage to the crankshaft. The Bearing Watchdog System is one proved, effective way to cut Diesel maintenance costs. It will save you thousands of dollars and the loss of many hours operating time for your Diesel equipment.

- ★ Cuts Diesel Maintenance Costs
- ★ Protects the Crankshaft
- ★ Permits Maximum Bearing Wear
- ★ Reduces Need for Frequent Bearing Inspection
- ★ Locates Faulty Bearing Instantly
- ★ Simple . . . Positive . . . Has Low Maintenance Factor
- ★ Can be Operated Either Pneumatically or Hydraulically
- ★ Protects the Engine

We invite inquiries from Diesel Designing Engineers, Diesel Engine Manufacturrs, and Diesel Operators. Write today for detailed information.

PAXTON DIESEL ENGINEERING COMPANY

OMAHA 5, NEBRASKA



WHEN A PEDRICK RING TURNED FAILURE INTO SUCCESS!

A WELL-ESTABLISHED MAKER OF ENGINES was on the verge of quitting.

Their new engine was revolutionary. Powerful, lightweight, compact, high-speed, very flexible. It had everything. It was already being widely used when complaints began to pour in. Everywhere, results were the same . . . excess oil-consumption.

The engine was taken off the market. The new factory and office closed. Finally, engineers and research men were ready to write it off as a failure.

Right then, Pedrick engineers entered the picture. They suggested a newly developed Pedrick oil-control ring. This ring, actually two rings in one groove, backed by an expander, saved the day. The factory went back into production. Today, those engines *with Pedrick rings in them* are used around the world.

These bare facts are typical of the *big* difference that the *right* ring can make, and of the paramount importance of Pedrick's research in rings. For more than twenty-five years, Pedrick has meant *progress* in piston rings. Put this experience to work.

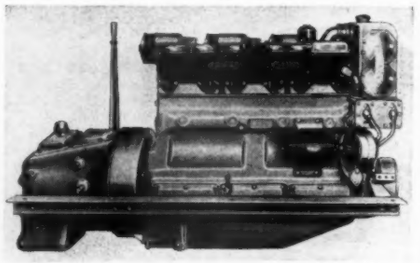
For practical help . . . for rings to fit every size, make or type of Diesel . . . call on Pedrick. WILKENING MANUFACTURING CO., Philadelphia 42, Pa. *In Canada:* Wilkening Manufacturing Co. (Canada), Ltd., Toronto.

Pedrick
precisioneered
PISTON RINGS

Cummins Adds 200 and 275 Hp Diesels to Line of High Speed Marine Models

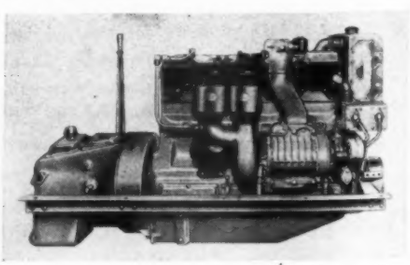
THE Cummins Engine Company, Inc. has announced the addition of two engines to the extensive line of Cummins Marine Diesels. The new high speed Diesels are the Model NHM-600, with a maximum rating of 200 hp. at 2100 rpm., and the supercharged Model NHMS-600, rated 275 hp. (maximum) at 2100 rpm. Cummins developed the models in line with the established Cummins policy of "more power per pound" through the use of high speed Diesels.

It is not strictly correct to term the Models NHM-600 and NHMS-600 "new" engines. Both were developed from the long proved and familiar Series H and supercharged HS, six cylinder Diesels. The NHM-600 and NHMS-600 Cummins Marine Diesels are merely higher horsepower, higher speed versions of the HM-600 and HMS-600 models. The increased capacities of the newly developed Diesels were obtained by these three major innovations in the established Cummins design: (1) By increasing the maximum operating speed from 1800 rpm. (Models HM and HMS) to 2100 rpm. (Models NHM and NHMS). (2) By increasing size of the bore from 4⅞ in. to 5⅛ in., with corresponding increase in piston displacement from 672 to 743 cubic inches. (3) The increased air supply needed to assure efficient combustion of the additional fuel required to produce increased horsepower is obtained by the use of dual intake valves. Dual exhaust valves permit the rapid exhausting of gases from the combustion chamber.

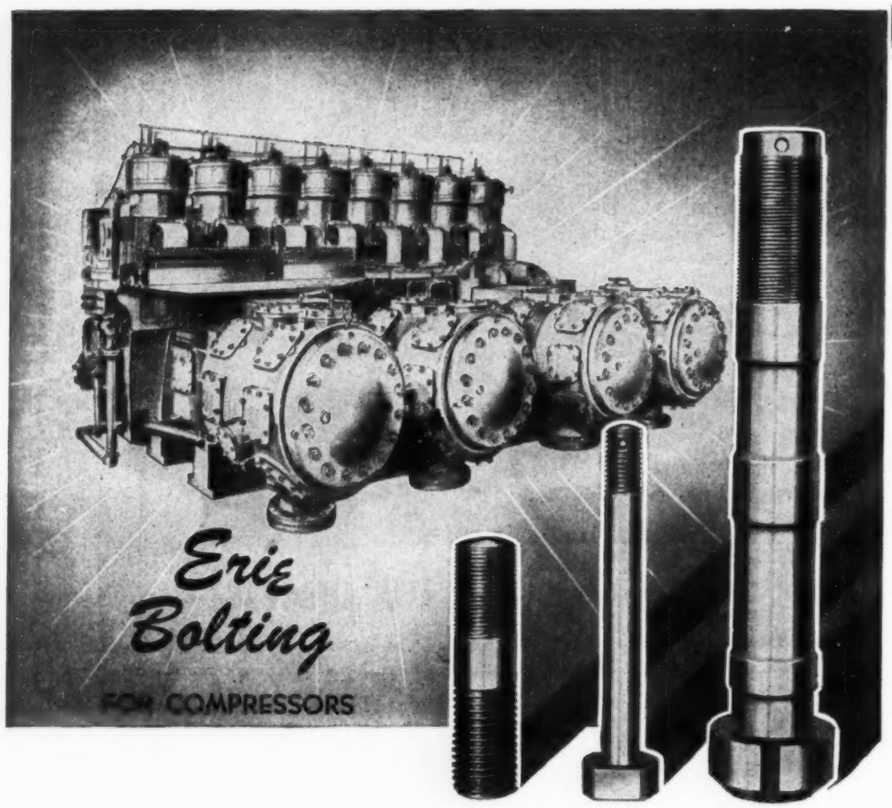


This view shows the generator side of Model NHM-600 Cummins Marine Diesel with standard equipment.

The heat exchanger in the NHM and NHMS line is of enlarged and improved design and construction. The exchanger incorporates two removable tube bundles, which are readily accessible for cleaning or replacing. The oil cooler arrangement is of similar construction. The oil cooler is installed on the fresh water side of the circulating system and is connected with the thermostatically controlled by-pass line. This arrangement has proved of advantage when "warming up" a cold engine. In most other respects, these Cummins Marine Diesels bear a marked resemblance to the HM line. Basic design and construction are the same. A high percentage of parts, including crankshaft, connecting rods, main and connecting rod bearings and many others, can be used interchangeably in either series of engines. In announcing the development of these new additions to the Cummins line, the company made clear that manufacture of all other models will be continued.



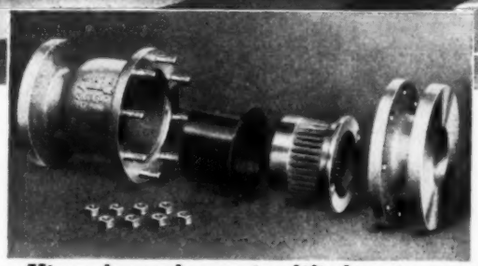
Supercharger side of Model NHMS-600 Cummins Marine Diesel.



SEND YOUR BOLTING SPECIFICATIONS TO A SPECIALIST

ERIE is manufacturing bolts and studs to the exacting specifications of many compressor builders. We are equipped to work with any material heat treated and threaded to specification and machined to specified tolerances. Consult with Erie Bolt & Nut Company for your next requirements.

ERIE BOLT & NUT CO.
ERIE, PA.
STUDS • BOLTS • NUTS ~ ~ ALLOYS • STAINLESS • CARBON • BRONZE



View above shows simplified parts assembly of Grove ChexFlo Valves consisting of: 1. Valve Body, 2. Flexible Synthetic Rubber Tube, 3. Slotted Cup-shaped Core, 4. Flange Closure.

- ★ Positive Bubble-tight shut-off
- ★ Instantaneous in Operation
- ★ Closes on Balanced Flow
- ★ Avoids Pressure Impulses
- ★ Self-compensating for Wear
- ★ Requires no Maintenance
- ★ Silent in Operation

EMBODIES NO METALLIC MOVING PARTS

Contrasted to ordinary check valves the Grove ChexFlo employs no metallic moving parts. Operation is effected by means of a synthetic rubber tube which expands to open and contracts to close over a slotted cup-shaped metal core. Uniform and constant spring rate of the flexible tube sets up no inertia to cause operation in excess of flow requirements. Tube closes instantly on balanced flow prior to inception of back flow. This eliminates any tendency to establish pressure impulses, shock or water hammer in flow line. For full details write for Bulletin 610 today.

GROVE CHEX-FLO MODEL 60 CHECK VALVES

GROVE REGULATOR COMPANY

65th & GREEN STREET, OAKLAND 8, CALIFORNIA • *Eastern Sales and Export Office:* 30 Rockefeller Plaza, New York City
Factory Branches: 108 Portwood, Houston, Texas • 1930 West Olympic Boulevard, Los Angeles 6, California

N. C. Sate College to Continue Diesel School

THE Greater University of North Carolina has requested that N. C. State College at Raleigh be allowed to retain and use Navy Diesel engines on a dollar-a-year rental basis and has been advised by the Navy Department that the request is "under consideration." The engines, valued at $2,000,000, were used during the war to train Diesel engineering officers for the Navy, and have been declared surplus. The Navy has offered to sell them to the university for 40 per cent of their original cost, but the university, declaring that it was not in a position to make such an expenditure, asked that it be allowed to maintain the engines and the Diesel school, which, in the event of another war, would immediattely revert to the Navy again. As the Navy has no further need for the equipment, it has been indicated unofficially that the request will be granted.

C. H. Gehrke Appointed Gray Marine Sales Manager

THE appointment of C. H. Gehrke to the post of General Sales Manager of Gray Marine Motor Company has been announced by John W. Mulford, president of Graymarine.

C. H. Gehrke

Mr. Gehrke is one of a group of younger men in the organization who have grown with the company and acquired a valuable background of practical experience in the marine engine field. He is well known in the industry. He joined the Gray Sales Department in 1936. During the war period he managed one of the company plants on a U. S. Navy parts project, and until his present position was in charge of boat manufacturers' accounts.

H. G. Sharp Named General Manager of Graver Tank

THE Graver Tank and Manufacturing Co., Inc. announces the appointment of H. G. Sharp to the post of general manager. A veteran of 27 years production experience in this country and in Europe, he will take over the general manager's duties in connection with the entire Graver operation. Mr. Sharp goes to Graver from the General Machinery Ordnance Corporation where he held the position of production manager and later that of assistant general manager.

He attended the Sheffield Scientific School of Yale University. In the twelve year period following his graduation in 1918, he rose from apprentice machinist to production engineer with the Pierce Arrow Motor Car Company. He then joined the staff of Day, Zimmerman Inc. of Philadelphia as a consulting engineer and after several assignments in the United States, organized their European subsidiary. Mr. Sharp has also been associated with the Cyclops Steel Company of Titusville, Pa.; the Transue and Williams Steel Forging Corporation of Alliance, Ohio; and the Hollow Steel Propeller Division of the Curtiss-Wright Corporation.

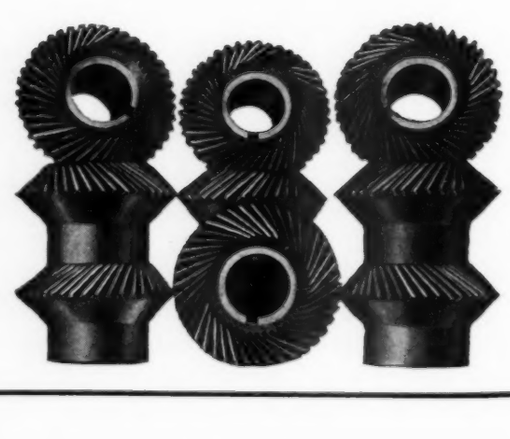
BEVEL GEARS

Brad Foote Gears

CAPACITY

Brad Foote Precision Cut Gears — every type — spur — helical — herringbone — bevel — nonferrous — made in quantities of any proportion. Write for details and delivery schedules when in need of quantity deliveries to meet your necessary requirements.

★ STRAIGHT BEVEL
★ SPIRAL BEVEL
★ MITRE SPIRAL BEVEL



BRAD FOOTE GEAR WORKS
1309 South Cicero Avenue
Dept. D, Cicero 50, Illinois

Hydraulic Machinery Inc. Appoints Nagle Director of Sales

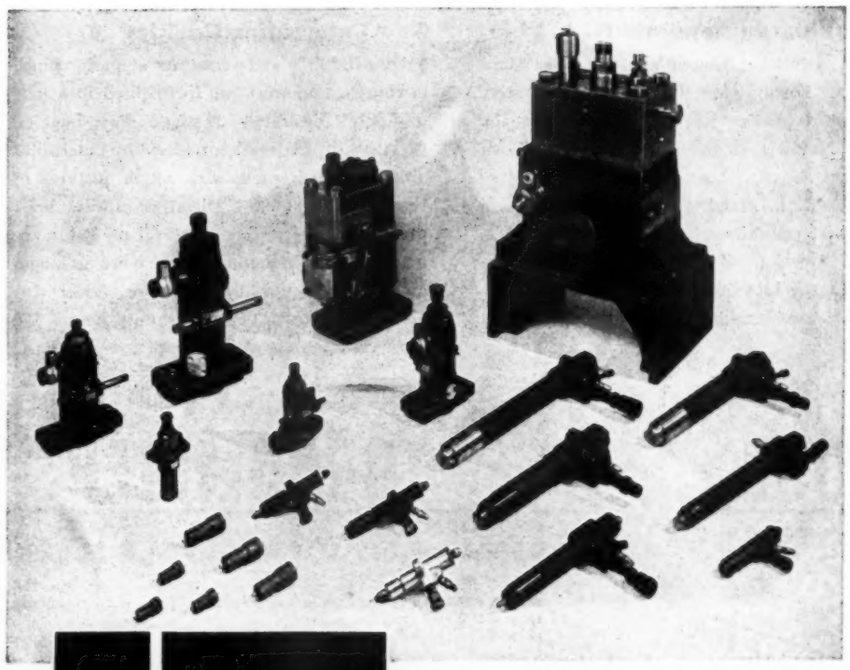
HARRY L. WISE, president and general manager of Hydraulic Machinery Inc., announces the appointment of Ted Nagle as director of sales and advertising of this organization and associated companies: Superdraulic Corporation, Dearborn, and Steel City Testing Laboratory and Electro Mechanical Devices Company, Detroit.

Ted Nagle

Mr. Nagle's experience dates back to the early nineteen-teens and was identified with such well known successes as United Motors Service and Bendix. . . . -'While Hydraulic Machinery Inc. is only five years old, it is already a major factor in their field and the purpose of the appointment of Mr. Nagle with his broad experience in sales and advertising," says Mr. Wise, "is to fully coordinate this phase of our various activities."

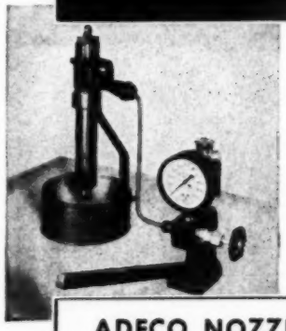
Sales Manager Returns

FRED D. LIVINGSTON has recently returned as Sales Manager of the R. H. Sheppard Co. In June, 1943, Mr. Livingston took leave of absence from the Sheppard Company to accept a commission in the U.S.N.R. During the war Mr. Livingston served in Washington and at the Charleston Navy Yard. As the Navy is a large user of Diesels, he had a fine opportunity to observe many different makes of Diesel engines at work under many varying conditions. This experience should prove very valuable to Mr. Livingston in performance of his renewed duties as Sales Manager of Sheppard Diesel engines.



adeco...

YOUR SOURCE FOR DEPENDABLE FUEL INJECTION EQUIPMENT



Whether you need standard fuel injection equipment or special units built to your specifications, Adeco offers the logical source of supply.

Today's line of Adeco equipment, the outgrowth of long experience in serving the Diesel industry, includes: Standard fuel injection pumps in plunger diameters from 7 mm. to 31 mm.; a complete line of standard nozzles and nozzle holders, including the water-cooled type; and the Adeco nozzle tester.

All Adeco products are built to highest standards, with years of trouble-free operation behind them to testify to their reliability.

ADECO NOZZLE TESTER

For Low-Cost Maintenance

America's most widely used nozzle tester enables any mechanic to make quick, accurate tests on injector opening pressure, spray pattern, etc., and detect stuck needle valves and leakage around valve seats. Compact, portable, sturdy, precision-built. Pressures up to 10,000 p.s.i. Tests both large and small injectors on bench or engine. Prevents costly delays and possible damage to engine. Standard or Navy-approved gauge. Ideal for testing hydraulic equipment. Write for bulletin.

ADECO

AIRCRAFT & DIESEL EQUIPMENT CORP.

4401 NO. RAVENSWOOD AVE. • CHICAGO 40, ILLINOIS

Worthington Appoints W. A. Finn

W. A. FINN has been appointed Export Manager of Worthington Pump and Machinery Corporation having just been released from the U. S. Navy. Finn succeeds George Gellhorn who has accepted a position of General Manager of C. E. Halaby, one of Worthington's industrial machinery dealers in Columbia, South America. Before the war, Finn was manager of Worthington's Boston District office. His new headquarters will be in Harrison, N. J.

New Caterpillar Booklet

DURABILITY and versatility of performance in construction work are highlighted in a new profusely illustrated 24-page color booklet, Diesels With Endurance, released by Caterpillar Tractor Co. Replete with action pictures of veteran "Caterpillar" Diesel units, the book presents an interesting portrayal of endurance marks by machines, some of which are no longer on the production line, but are still serving after 15,000 to 50,000 heavy duty hours. To receive a free copy of this booklet, request Form 9092 from Caterpillar Tractor Co., Peoria 8, Illinois.

USE Snap-on TORQOMETERS

WHEREVER ACCURATE BOLT TENSION IS REQUIRED

DISTORTION caused by inaccurate tensioning of studs and bolts wastes power, promotes wear and is often the cause of mechanical failure. With Snap-on Torqometers precision tensioning is done more quickly and easily than "guesswork" tightening. Even inexperienced workers pull to specified tension every time . . . they *see* the torque reading as pressure is applied . . . they work swiftly, confidently, *accurately*.

The larger sizes of Snap-on Torqometers are widely used in railway maintenance operations. In this photograph Diesel engine crab nuts are being precision tensioned to 1800 foot pounds. The power of three men swing a 2000 ft. lb. Torqometer, length with handle 79 inches.

The full range of Snap-on Torqometers is covered in complete catalog of 3000 Snap-on tools for production, assembly, maintenance. Mailed on request. Write, SNAP-ON TOOLS CORPORATION, 8106-C 28th Avenue, Kenosha, Wisconsin.

COMPLETE RANGE OF TYPES AND SIZES FOR PRODUCTION ASSEMBLY MAINTENANCE

FROM ZERO TO 30 INCH POUNDS — UP TO 2000 FOOT POUNDS

Honan-Crane To Distribute Visco 77

HONAN-CRANE Corporation, a subsidiary of Houdaille-Hershey Corporation, has made arrangements for the exclusive sale and distribution of Visco 77, a lubricating oil-water emulsion breaker.

Visco 77 is a liquid chemical additive which, when added to the most stubborn water emulsions in the amount of 1/10 of one per cent (one gallon of Visco 77 to 1,000 gallons of lubricating oil) and the oil maintained AT REST at a temperature of 180°-185° F., will break the emulsion and all water will settle out in from 24 to 48 hours.

Visco 77 can be used with safety on any major circulating system where difficulty is experienced in removing water from the lubricating oil, such as steel mills, metal working industries, aluminum plants, gear systems, Diesel engine crank case oils, engine oils, etc.

Additional information and instructions for use of Visco 77 may be obtained from Honan-Crane Corporation, 202 Indianapolis Avenue, Lebanon, Indiana.

Kerkling & Company Issues New Booklet

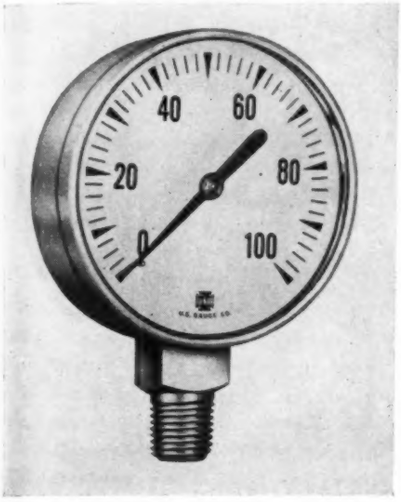
A NEW 12 page booklet, describing the K & W line of engine block and radiator repair equipment as well as much practical information relative to this type of work has just been prepared by Kerkling & Co. The patented mechanical method of stopping and repairing engine block cracks is covered thoroughly and illustrated by diagrams and photographs. Both shop owner and mechanic will be interested in the presentation of the methods and equipment needs for making block repairs that, while invisible, are said to last through the life of the engine. The booklet will be sent free upon request to Kerkling & Company. Bloomington, Indiana.

Correction Please

IN describing the 3,000 hp. Baldwin Diesel-electric locomotive in the January issue of DIESEL PROGRESS, we erroneously stated that the two turbocharged Baldwin Diesel engines installed in this locomotive were equipped with American Bosch fuel injection systems. The fuel injection equipment on these engines is Bendix-Scintilla and we humbly apologize to all concerned for having made this error.

New U. S. Gauges

THE United States Gauge Division, American Machine and Metals, Inc. announces the introduction of a complete new line of streamlined gauges in a modernized, eye-appealing design. Engineers of the company, working hand-in-hand with the topmost designers, have succeeded in developing gauges of improved construction, appearance, and readability and precision.



The working parts of these new U. S. G. instruments are the culmination of years of experience in instrument engineering and new-materials research. The streamlines of the neutral gray case are heightened by a striking ivory-toned dial with contrasting red and black graduations.

New Kelite Paint Remover

A NEW paint remover has been made available by Kelite Products, Inc., makers of industrial cleaning compounds. This new material is safe on any metal or hardwood surface and provides the speedy removal of all types of paint and enamel. Its complete safety on all metals or hardwood, its non-inflammable characteristics, and its speed more than meet all requirements.

Probably the outstanding quality of Kelite N. F. Remover is its amazing speed. Preparatory tests, as well as recent reports have emphasized this. As many as 8 coats of paint can be penetrated, loosened and removed in one step, taking no longer than 30 minutes. Unusual cases have been reported where 22 coats were removed in three such steps. Complete removal of one or two coats can be accomplished in 10 minutes. Removal after penetration is easy in that paint or enamel can be sheeted off by a pressure rinse.

Are Diamond Engine Drives Successful?

READ THIS:

"No Engine Builder having once applied Diamond Timing and/or Auxiliary Drives has ever abandoned them."

During the past 20 years, some forty models of engines in regular production have used Diamond Roller Chain Timing Drives. These include Diesel, gasoline, gas, oil, and steam engines.

That Diamond Engine Drives are successful—that they have proved unusually superior—is undeniable. Once adopted, their performance indicated continuance. Once "on," they stayed "on."

The long experience of Diamond Engineers makes their recommendations practical. They know how to put a Diamond Drive on an engine.

When considering new models or redesigns, why not ask for suggestions? DIAMOND CHAIN & MFG. CO., Department 407, 402 Kentucky Avenue, Indianapolis 7, Indiana. Offices and Distributors in All Principal Cities.

DIAMOND ROLLER CHAINS

National Marine Exposition May 20-25

ONE of the first large post-war shows scheduled at New York's Grand Central Palace is the National Marine Exposition, which will be held the week of May 20-25. The exposition will be held under the sponsorship of the Propeller Club of the United States not only as a service to the marine industry but also as a feature in that organization's program to further develop public interest in the American Merchant Marine.

The marine exposition will be particularly timely. Public attention has been attracted to the American marine industry by its war record. In four years, American shipyards turned out a merchant fleet which today exceeds in tonnage the combined pre-war fleets of the world's leading maritime nations. Despite the loss of 743 merchant ships during the war through direct enemy action and marine hazards due to war conditions, the U. S. Merchant Marine consisted of 5,529 ocean-going vessels on February 1 of this year. Even more spectacular in the eyes of the general public was the war record of American ship operations which contributed so importantly to Allied victory.

Displays at the marine exposition will portray the part played by leading concerns in the industry during the war. Devices and equipment developed for war use but which will be adapted to peacetime service for improved navigation, safety at sea and more efficient ship operations will include radar, loran and other electronic apparatus. Several large shipbuilding companies will exhibit models of ships constructed in recent years, while leading American steamship companies, again able to offer their facilities to the public for travel and shipment of cargo, will be on hand to show the traveler and shipper what they may expect of the new American Merchant Marine in the near future.

Other exhibitors will include manufacturers of marine machinery, engineering devices, specialties and equipment. Large oil companies will show displays, with experts in attendance to discuss problems relating to the lubrication of marine machinery. Also included will be displays of both wire and manila rope, the latest in marine paints for hull and topsides protection, and many other exhibits directly applicable to the marine field. The list of exhibitors now totals more than a hundred.

BUCKEYE DIESELS

MARINE- STATIONARY

DAY following NIGHT is always DEPENDABLE.

It's the same kind of DEPENDABILITY that has faithfully served owners of Buckeye engines ever since 1908.

When you install a Buckeye Diesel you make a profit-wise investment in LOW COST, EFFICIENT POWER which is the result of more than 37 years of proved engineering ability and manufacturing skill devoted exclusively to the building of marine and stationary engines.

Stationary and Marine Propulsion (Direct Reversing) Engines 150-*900 H.P.

Marine Auxiliary and Stationary Generator Sets 100-*600 KW.

*Supercharged Ratings to 1440 H.P. and 1000 KW.

"Be Profit-Wise and Dieselize with Buckeyes"

THE BUCKEYE MACHINE COMPANY, LIMA, OHIO

• ENGINE BUILDERS SINCE 1908 •

American Locomotive Appoints Carl J. Dinic

Carl J. Dinic has been appointed executive assistant to the president of American Locomotive Company, D. W. Fraser, president, recently announced. Mr. Dinic became associated with the company in July 1943 as assistant to the president. Prior to that he was with United States Steel Corporation of Delaware, with offices in Pittsburgh, and with Eastern Gas & Fuel Associates, Boston.

PROOF FROM A PARKER ENGINEER'S NOTEBOOK

Advantages of Parker Recommendations:

- Streamlined flow, free from obstructions. No pockets to cause turbulence. Less pressure drop; capacity and pressure requirements reduced.
- Fewer joints and connections — to reduce leakage, even under high pressure vibration, shock, fluid hammer, surge or accidental abuse.
- Compact, spacesaving, neat and simplified installation, especially in tight places — yet all parts are accessible for quick, easy installation and service.

• • •

We've engineered Fluid Power installations for many people — to bring them these advantages, under a wide range of exacting conditions. May we do the same for you? Let's talk it over.

THE PARKER APPLIANCE CO.

CLEVELAND • LOS ANGELES

FLUID POWER PRODUCTS FOR ALL INDUSTRY

Socony to Expand Research and Development Laboratories

AS part of its increasing research in petroleum chemistry and in all aspects of motor power, the Socony-Vacuum Oil Company Inc., announced that it will construct new buildings and expand its facilities at its Research and Development Laboratories at Paulsboro, N. J. The company will continue to maintain its technical service laboratories in Brooklyn.

In announcing the company's plans, Wilbur F. Burt, vice-president in charge of manufacturing, said that foremost among the projects will be a chemistry building, a physics building and a pilot plant for lubricating oils. A section of the physics laboratory will be turned over to exploratory work in the use of nuclear energy and electronic devices to determine the extent to which the oil industry will figure in this field. The chemistry building will be the center of research in the rapidly expanding field of petroleum chemistry and fundamental research on fuels and lubricants.

Other fields in which research will be expanded as a result of the new construction will be in gas turbines, airplane, automobile, Diesel and marine engines.

Sludge, gum and acid accumulations rob your engine of much of its power. **LOOSITE** is the safe, economical solvent for cleaning out these petroleum residues. It rids the engine of all sludge and gum quickly by reaching every working part—restoring *original* power.

After this simple **LOOSITE** treatment, add a can of **SILOO** with each change of crankcase oil and your petroleum residue problem is solved for good. **SILOO**, the seven-solvent liquid compound, *keeps* the engine clean by dissolving all *new* sludge and gum formations. It prevents rust, acid formation and corrosion. **SILOO** becomes part of the lubricant itself and cannot be removed by any standard filter.

A **LOOSITE-SILOO** treatment will show immediate results on any type Diesel engine, regardless of quality or brand of oil used. Fifteen years of service to Diesel experts endorses its use.

If you heat with oil—write for information on

SILOO FUEL OIL TANK SOLVENT

SOLVENTS FOR ALL TYPES OF PETROLEUM RESIDUES

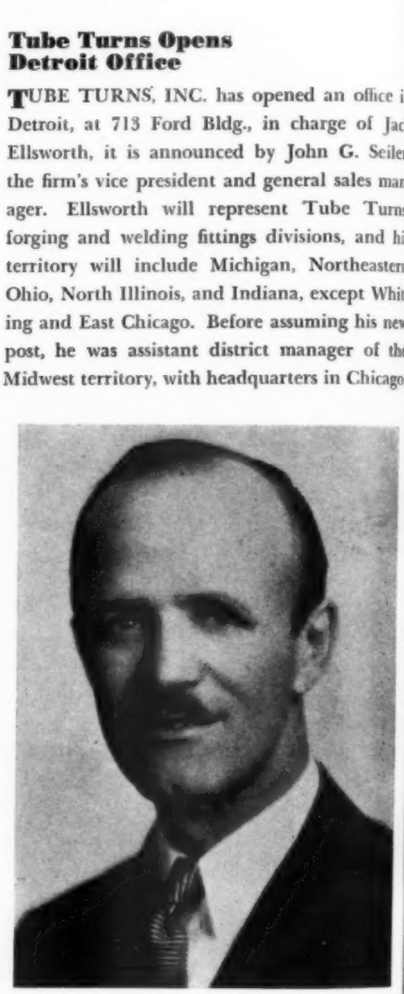
Petroleum Solvents

CORPORATION

General Offices: 331 Madison Avenue, New York 17, N. Y.
Plants and Laboratories: Port Reading, New Jersey - Petroleum Solvents Corp. of Canada, Ltd., Dominion Square Bldg., Montreal

Tube Turns Opens Detroit Office

TUBE TURNS, INC. has opened an office in Detroit, at 713 Ford Bldg., in charge of Jack Ellsworth, it is announced by John G. Seiler, the firm's vice president and general sales manager. Ellsworth will represent Tube Turns' forging and welding fittings divisions, and his territory will include Michigan, Northeastern Ohio, North Illinois, and Indiana, except Whiting and East Chicago. Before assuming his new post, he was assistant district manager of the Midwest territory, with headquarters in Chicago.



Jack Ellsworth

A native of Sutherland, Nebraska, Ellsworth attended the Wisconsin School of Mines and began his business career as an erection engineer for Fairbanks-Morse. He was a member of Ford's mechanical and structural engineering staff, in Detroit and Pittsburgh, and associated with the Ellsworth Pine & Supply Co., Milwaukee, before joining Tube Turns in December, 1940.

Caterpillar Promotes Four Engineers

PROMOTION of three Caterpillar Tractor Co. research projects directors and an assistant engineer to positions as assistant directors of research is announced by C. G. A. Rosen, director of the company's research department.

The newly appointed assistants are: Dr. L. A.

Blanc, who will be in charge of physical, chemical, combustion and metallurgical projects; W. L. H. Doyle, supervisor of special investigations and general research projects including liaison with cooperative and national research activities; C. R. Maxwell, in charge of Diesel engine, combustion systems and fuel injection development projects; and C. R. Schad, in charge of duties of organization, personnel and operational activities.

Dr. L. A. Blanc *W. L. H. Doyle*

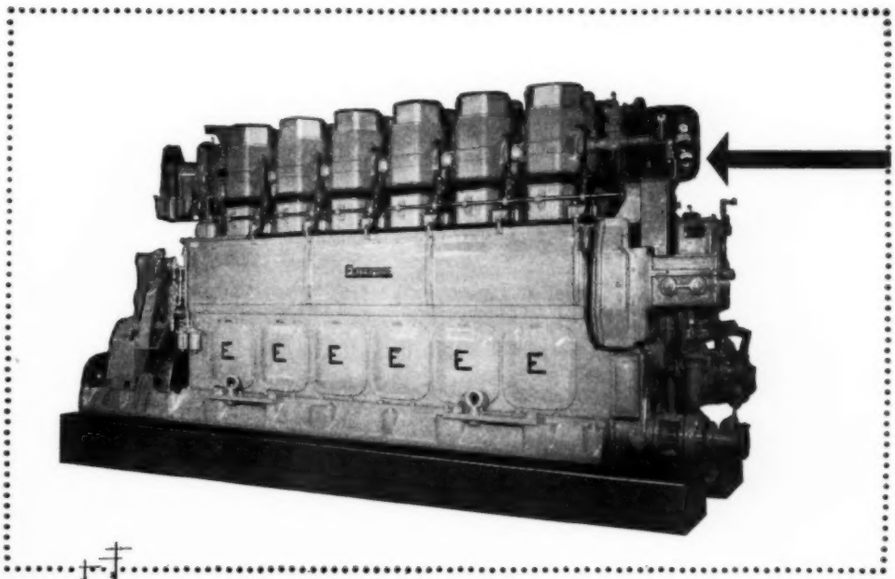
C. R. Maxwell *C. R. Schad*

An expanded postwar program in the field of research, calling for greater flexibility and efficiency, resulted in placing specialists at the head of various research activities, according to Mr. Rosen. J. M. Davies, present assistant to Mr. Rosen, will assume added responsibilities including tractor, earth moving, special products and current product revision projects as well as all field activities.

Parker Appliance Appoints Distributors

D. A. CAMERON, manager of sales of the Parker Appliance Company, announces the appointment of a number of manufacturers' supply firms as distributors of Parker industrial fittings and tube bending equipment, widely used in the construction of hydraulic, lubrication, and fluid couveying systems. Parker technical service engineers will be made available on request through distributors or to the company directly, for consultation on the design and application of fluid power systems.

New distributors are: Whitehead Metal Products Co., New York, Boston, Buffalo, Newark



Alnor Pyrometers

"a major factor in determining proper engine performance . . ."

The powerful, long range, V-4 type tugs of the Maritime Commission are powered with twin Enterprise turbo super-charged Diesels. Besides cylinder exhaust temperatures, the inlet and exit temperatures of the exhaust gas turbo-blower are of great importance—a major factor in determining proper loading and proper performance of the engine. Alnor Exhaust Pyrometers provide for a simple, convenient installation, and assure reliable temperature indications. Afloat or ashore, you will find Alnor Pyrometers rendering unfailing service with Diesel and large gas engines of many types. Write for Exhaust Pyrometer bulletins.

ILLINOIS TESTING LABORATORIES, INC.
420 North LaSalle Street
Chicago 10, Illinois

and Philadelphia; Williams & Co., Pittsburgh, Cleveland and Cincinnati; A. E. Borden Co., Boston; Carey Machine & Supply Co., Baltimore; Louis H. Hein Co., Ardmore, Pa.; Squier-Schilling & Skiff, Newark; Somers-Fitler & Todd, Pittsburgh; W. M. Pattison Supply Co. and Strong-Carlisle & Hammond, Cleveland; Great Lakes Supply, Chicago; Vincent Brass & Copper Co., Minneapolis; Metal Goods Corporation, St. Louis, Tulsa, Dallas and Houston; General Machinery & Supply and American Brass & Copper Co., San Francisco; Metropolitan Supply Co., Los Angeles; and Eagle Metals Co., Seattle.

Star Motor Opens New England Office

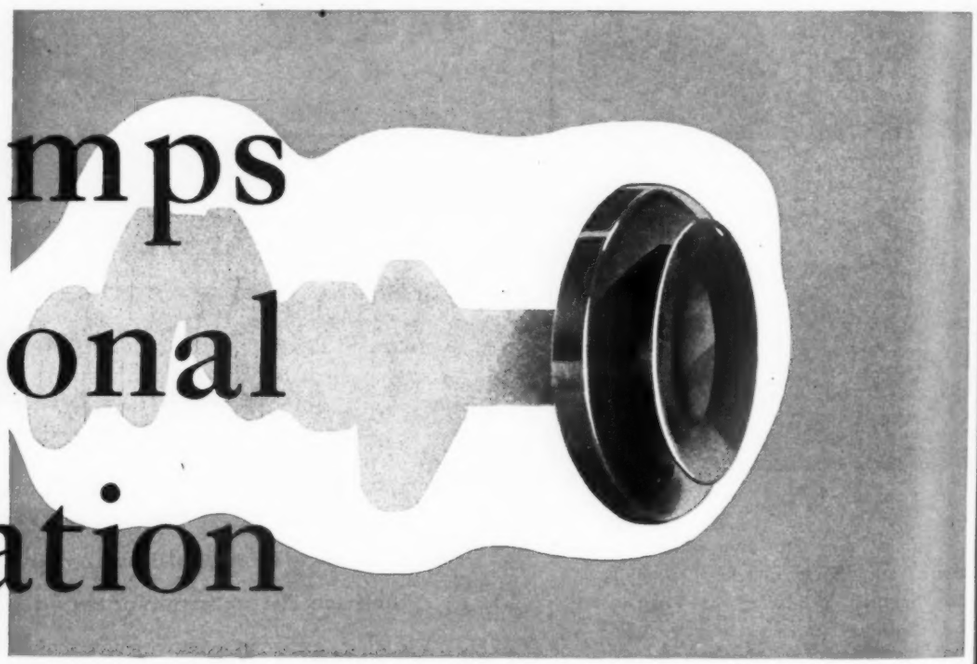
STAR Electric Motor Company announces the opening of a New England district office at 1430 Massachusetts Avenue, Cambridge 38, Massachusetts. Elliot W. Knight has been appointed District Manager. Mr. Knight is well-known in New England, having ten years of application engineering experience in Springfield, New Haven, Hartford, and Boston. He is a graduate in Electrical Engineering of Rensselaer Polytechnic Institute.

Handbook of Stainless Steel

A 100-PAGE pocket-size handbook presenting practical information on 26 types of stainless steels has just been published by Allegheny Ludlum Steel Corporation. It brings up to date, supersedes and amplifies the stainless steel chapters of the earlier "Handbook of Special Steels" and includes most of the data and information that is available on file-size "Blue Sheets" for the various types of stainless steel.

The handbook contains a 44-column finder chart giving analyses, properties, hot working temperatures and heat treatment of the different types and a general discussion of types and properties of stainless. This is followed by a table of corrosion resistance of four leading types of stainless to 230 chemicals and common materials. Allegheny Ludlum Steel Corporation, Breckenridge, Pa., will furnish the handbook upon request.

It damps Torsional Vibration at its source



● This new, simple Houdaille* invention is, we believe, the effective answer to torsional vibration in internal combustion engines.

It damps BOTH major and minor critical orders of vibration.

Extreme temperature variations have virtually no effect upon its efficiency.

Most amazing of all is its simplicity. There are only *three* parts . . . a housing, an inner flywheel or damper mass and a bronze bushing.

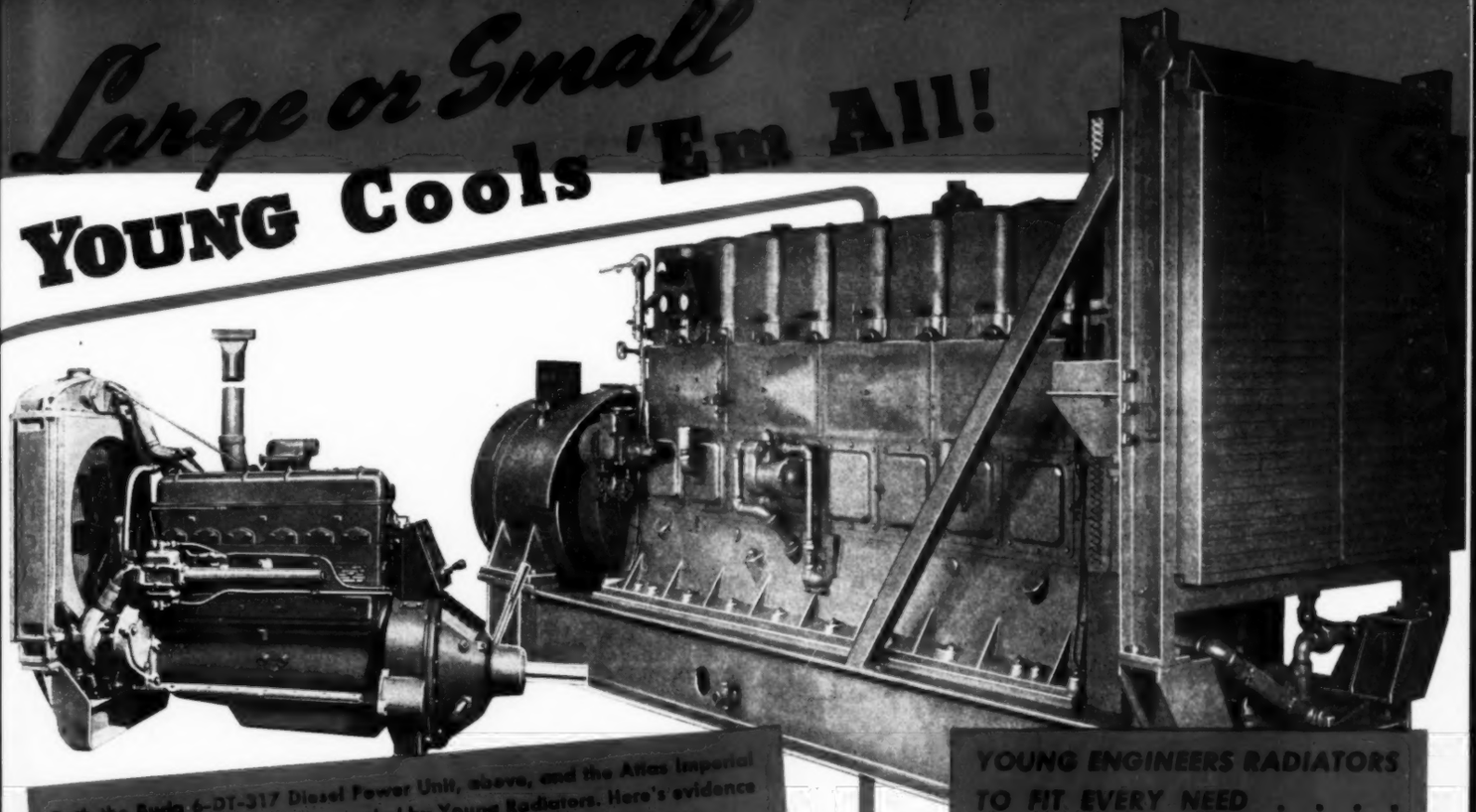
Hermetically sealed in the housing is the newly developed Silicone fluid, notable for its nearly flat viscosity curve through a wide range of temperature. There is no wear, no maintenance expense. The Damper, we believe, actually will outlast the engine.

Houdaille is prepared to design and build Viscous Torsional Vibration Dampers to meet the specific vibration characteristics of any engine, either gasoline or diesel, regardless of size.

HOUDE ENGINEERING DIVISION OF
HOUDAILLE-HERSHEY CORPORATION
MAKERS OF HYDRAULIC CONTROLS
BUFFALO 11, NEW YORK

*Pronounced—Hoo-dy

Large or Small YOUNG Cools 'Em All!



Both the Buda 6-DT-317 Diesel Power Unit, above, and the Atlas Imperial Diesel Engine, at the right, are cooled by Young Radiators. Here's evidence of the wide range of cooling problems solved by Young Engineers.

● Whatever the cooling job . . . whether it be in locomotives that send smooth, streamlined trains flashing across the nation, on huge power generators in the nation's largest cities, or on the multitude of other diesel power applications . . . Young makes a radiator that meets every cooling requirement. Proper heat transfer engineering keeps giant and midget alike in condition to give rugged, efficient service, day after day. That's why the diesel field calls upon Young Technicians so consistently for aid in meeting specialized heat transfer problems. For rugged construction, utmost efficiency, low cost, outstanding performance, easy installation, investigate Young Heat Transfer Products and Engineering Service. There is no obligation.

YOUNG Young Quality

HEAT TRANSFER PRODUCTS

OIL COOLERS • GAS, GASOLINE, DIESEL ENGINE COOLING RADIATORS • HEAT EXCHANGERS • INTERCOOLERS • ENGINE JACKET WATER COOLERS • EVAPORATIVE COOLERS • GAS COOLERS • UNIT HEATERS • CONVECTORS • CONDENSERS • AIR CONDITIONING UNITS • EVAPORATORS • HEATING COILS • COOLING COILS • AND A COMPLETE LINE OF AIRCRAFT HEAT TRANSFER EQUIPMENT.

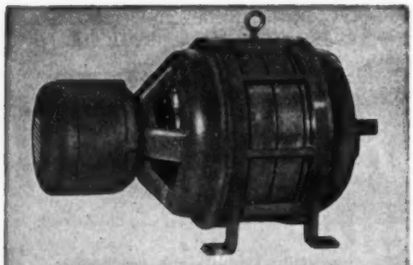
YOUNG ENGINEERS RADIATORS TO FIT EVERY NEED . . . .

Cast Tank Radiator has strength and appearance needed for power unit application. Is fitted with efficient fan shroud. Front has guard screen to prevent damage to core.

Sheet metal pressed tank and side member type radiator for medium size power units. Light in weight, yet of durable construction.

"Mono-Weld" Type Radiator has welded steel tank and side members, rugged front core guard and rear fan guard screens. "Mono-Weld" construction assures maximum strength on big jobs.

YOUNG RADIATOR CO. • Dept. 236-C • RACINE, WIS., U. S. A.



Columbia A.C. and D.C. Generators are built to meet highest performance standards. Complete range of application, including light, power, ship auxiliaries, or custom designed units.

D.C. UNITS range from 7½ to 200 KW.
A.C. UNITS range from 6¼ to 300 KVA.
Speeds and other specifications to meet requirements. Write for full information.

COLUMBIA ELECTRIC MFG. CO.
4519 Hamilton Ave., N.E., Cleveland 14, Ohio

COLUMBIA
GENERATORS
A.C. and D.C.

Tube Turns Announces New Appointments

JOHN G. SEILER, vice president and general sales manager of Tube Turns, Inc. has announced the appointment of Jack Green as sales manager of the welding fittings division. He attended the University of Kentucky and was the American Radiator and Standard Sanitary Corporation's branch manager in Mansfield and Akron, Ohio, before his affiliation with Tube Turns in February, 1941. He was stationed in Chicago, as district manager, before becoming the division's assistant sales manager in June, 1943.

Jack Green *Tom Pike*

Succeeding Jack Green as assistant sales manager of the welding fittings division is Tom Pike. He graduated from U.C.L.A. and is a specialist in refinery and oil well equipment. Determined to learn the petroleum industry literally from the ground up, his first job was as a "roughneck" in the Huntington Beach oil field. Then he became, successively, a warehouseman for Republic Supply Company of California and an engineer-salesman for W. R. Guiberson Company before taking over Tube Turns' Los Angeles office, in January, 1940. He subsequently became district manager in charge of the West Coast territory.

Perfect Circle Changes Officers

THE Board of Directors of The Perfect Circle Company, Hagerstown, Indiana made three changes in officers at their meeting held Tuesday, January 29. The newly elected officers are as follows: Lothair Teetor, Chairman of the Board; Ralph Teetor, President; and Macy Teetor, Vice President in Charge of Engineering. Daniel Teetor, Vice President in Charge of Manufacturing; Donald Teetor, Vice President in Charge of Sales and Leslie Davis, Secretary and Treasurer continue in their present official capacities. The change in officers becomes effective April 1, 1946.

Sheppard Diesel
GENERATING SETS

Avoid power interruptions . . . eliminate standby charges. Generate your own electricity with a Sheppard Diesel Generating Set. They're simple to operate . . . easy to service. Delivered complete . . . ready to provide low-cost power. Write for full information today.

Other models ranging from 2 to 36 K.W.

R. H. Sheppard Co., Inc.
16 Middle St., Hanover, Pa.

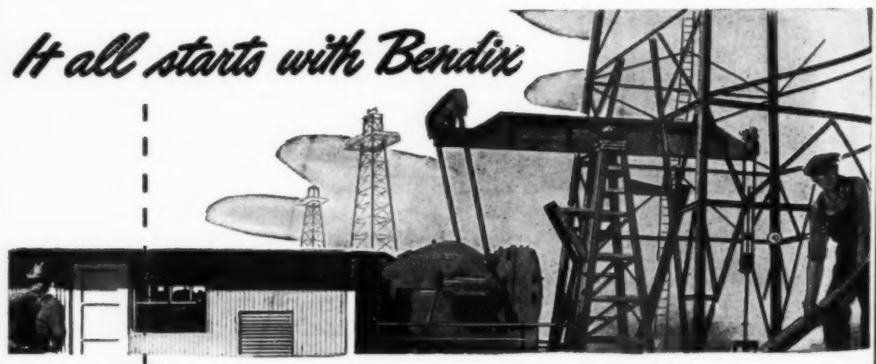
DIESEL'S THE POWER—Sheppard's THE DIESEL!

Profitable Opportunity

for distributor or agent on Pacific Coast to represent manufacturer of marine engine replacement parts. Long established manufacturer now making prompt delivery from Pacific Coast factory. For interview with Sales Manager in your office, write to Box 157, DIESEL PROGRESS, 2 W. 45th St., New York 19.

DIESELS
ALL SIZES TYPES
A. G. SCHOONMAKER CO.
80 CHURCH ST. PHONE WORTH 2-0455
NEW YORK 7, N. Y.
BUSINESS ESTABLISHED 1884

It all starts with Bendix



The Drive for Heavy-Duty Starting

Heavy-duty industrial machinery demands quick, dependable starting—and Bendix Heavy-Duty Starter Drives provide just that.

Specifically designed for the task at hand—engineered to operate satisfactorily even under adverse working and weather conditions—Bendix Heavy-Duty Starter Drives are performance-proven in starting all types of industrial machinery.

In the forests—on the farms—in the oil fields and in the factories—in fact, wherever heavy-duty starting demands *the best*—it's Bendix! Over sixty-five million installations of Bendix Starter Drives to date—many more *tomorrow*. Better buy Bendix!

*REG. U. S. PAT. OFF

Bendix Drive
Bendix AVIATION CORPORATION

ECLIPSE MACHINE DIVISION • ELMIRA, NEW YORK

Hamilton O. Penn

HAMILTON O. PENN, President of H. O. Penn Machinery Company Inc., died suddenly on January 31, 1946 of a heart attack at the Edgewater Beach Hotel, Chicago, Ill., where he was attending a 27th annual convention of the Associated Equipment Distributors. Mr. Penn was the Retiring President of the Associated Equipment Distributors and had been extremely active through all but the last two sessions of the convention and the evening previous had attended the installation ceremonies for the Past President's Group.

Mr. Penn was born in Hartland, Wisconsin, September 9, 1896; attended grade and high schools and then the Milwaukee State Normal College. He spent several years immediately following college in the construction industry as a Construction Superintendent. He then went into the manufacturing business associating himself with the T. L. Smith Company of Milwaukee where he became Assistant General Sales Manager. Early in the 1920's he decided to open his own business in construction equipment and located in New York City which has been headquarters for his rapidly expanding company, the H. O. Penn Machinery Company, which was incorporated in 1923. In addition to this main office and warehouse located at 140th Street and the East River, branch sales offices and service shops are maintained at Mineola and Poughkeepsie, New York and Newington, Conn., where complete parts facilities are maintained for many important lines of heavy construction and highway equipment.

He is survived by his wife Florence C. Penn and daughter Peggy Ann; father Orville W. Penn of Hartland, Wisconsin, two sisters—Mrs. Alice MacEachern and Mrs. Harriett Hanson, both of Evanston, Illinois and a brother Burton J. Penn of Hartland, Wisconsin.

Cooper-Bessemer Expands for South American Trade

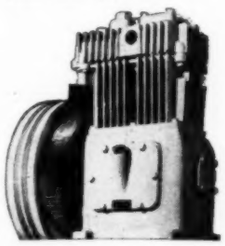
ESTABLISHMENT of a branch office in Caracas, Venezuela, to serve expanding markets in that country, Colombia and Peru, is announced by M. C. Pollock, vice president in charge of export sales for The Cooper-Bessemer Corporation. A survey of South American markets completed recently by Mr. Pollock indicated a growing demand there for Diesel engines and engine driven compressors.

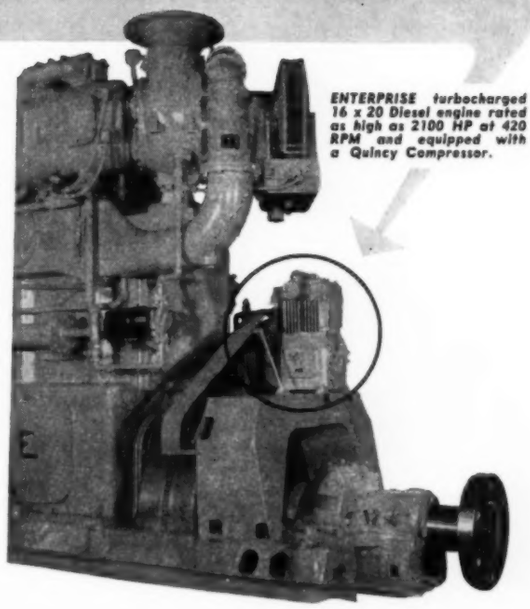
Thomas E. Kraner has been appointed branch

Quincy COMPRESSORS for DIESEL STARTING

Choice of Leading Diesel Engine Makers

DEPENDABILITY and compactness are compressor *"musts"* when Diesel engines are started by air power. Quincy offers a line of advanced design air compressors that are easily installed as an integral part of Diesel equipment. They can be relied upon for *dependable* starting power over a long, trouble-free service life. Sizes available from 1 to 80 cu. ft. displacement. Pressures up to 500 lbs. p.s.i. A Quincy compressed air specialist is ready to serve you. Ask him about your air problems.

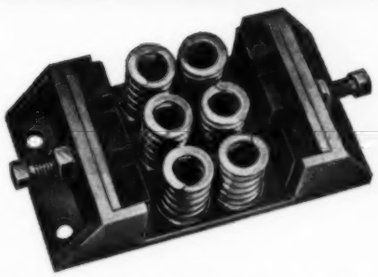




ENTERPRISE turbocharged 16 x 20 Diesel engine rated as high as 2100 HP at 420 RPM and equipped with a Quincy Compressor.

QUINCY COMPRESSOR CO.
Dept. K-36 Quincy, Illinois
Branch Offices: New York • Chicago • St. Louis • San Francisco

...A KORFUND "EXCLUSIVE" for Marine Diesels



Here's your double duty answer to the two big problems of marine diesel vibration isolation. It's Korfund Type SK Vibro-Isolator, a Combined Chock Isolator for heavy marine service.

Type SK, illustrated at right with top plate removed to show construction, is designed for efficient isolation of engine vibration. Steel springs are enclosed in welded steel housing with adjusting bolt for height.

In addition to the springs that prevent transmission of vibration to substructure, adjustable resilient chocks are provided for adequate protection against any lateral movement due to rolling or pitching of a vessel. Adjusting bolts in each side of the housing control engine movement under heavy operating conditions.

Write for complete details on Korfund Vibration Control Units for both stationary and marine installation.

KORFUND VIBRATION CONTROL

THE KORFUND CO., INC.
48-28 32nd Place
Long Island City 1, N. Y.

manager in charge of the new South American headquarters. Mr. Kraner, a graduate of Purdue University, has been affiliated with Cooper-Bessemer since 1937 and has been with its Washington office for the past six years. Mr. Kraner has already assumed his duties at the South American office.

Lewis L. Dollinger, Jr. Rejoins Dollinger Corporation

FOLLOWING five years of military service, including more than two years overseas duty as officer of an anti-aircraft battalion in the European Theatre, Lewis L. Dollinger, Jr. has received his discharge and is again associated with the Dollinger Corporation.

In addition to duties connected with his recent election as vice president of the company, Mr. Dollinger will act in a sales engineering capacity. He is a mechanical engineer, Cornell University class of 1938, and spent 2½ years in the engineering and sales department of Dollinger Corporation before entering military service with the 209th Coast Artillery Regiment.

Lewis L. Dollinger, Jr.

SPINNING POWER

GLOBE-UNION

SPINNING POWER! You can tell from the very first bark that Diesel engines like the quick, easy, sure starting with Spinning Power. It's persuasive. It's forceful. It's long-lived. Globe-Union Batteries are great companions for Diesel engines. Globe-Union Batteries have *Spinning Power.*

GLOBE-UNION INC. Milwaukee 1, Wisconsin

Diesel Engine Catalog

THE 1945 Edition of the DIESEL ENGINE CATALOG, Volume 10, is ready for distribution. It is the largest edition yet published—532 pages, hundreds of illustrations—a *Composite Catalog* of the *Entire Diesel Industry.* Page size 10⅛ in. x 13½ in.—a big book and a real value. A separate section devoted to each manufacturer's line of engines with completely illustrated descriptions and specifications—covering stationary, marine, automotive and railway types. Other sections cover Diesel accessories such as fuel injection equipment, chain and gear drives, electric, hydraulic and mechanical couplings, superchargers and many other items. Also contains a directory of products and manufacturers. An indispensable book for all interested in Diesels. Paper restrictions limit the supply so order your copy promptly—price $10, postpaid. Mail your order and check to *Diesel Engine Catalog,* 2 West 45th Street, New York 19, N. Y.

WEST COAST DIESEL NEWS

By FRED M. BURT

AMONG the preparations by Sitka fishermen for this season, the Sheldon Jackson School installed a 115 hp. Caterpillar Diesel in the seiner *SJS II.* The present engine, a 60 hp. Atlas Diesel was installed in the school's new 52-ft. seiner *Danz.*

Designed by H. C. Hanson, naval architect, Seattle, four steel 100 ft. combination beam trawlers and tuna fishing vessels are being built for operation by The Pacific Exploration Co., Seattle. Two built by Astoria Marine Construction Co., Astoria, Ore. (hulls sub-

STANDARD ENGINEERS NOTEBOOK

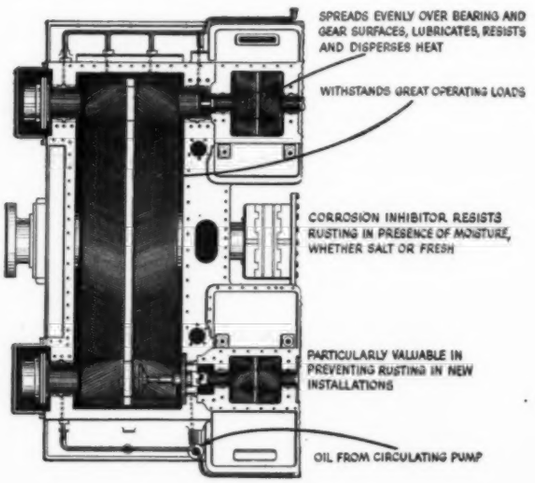
CALOL RPM

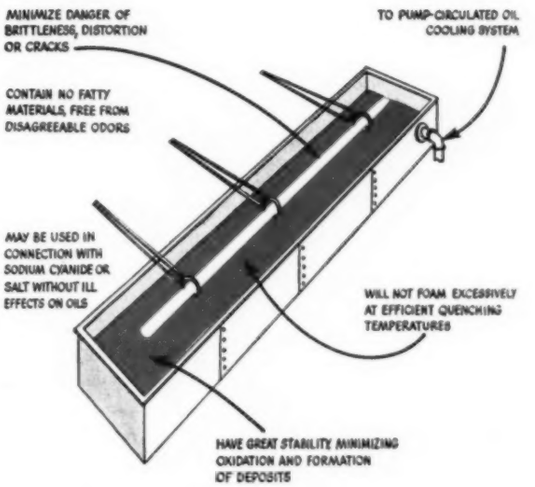
Inhibited turbine oils prevent rust damage

The usual danger of rusting when new installations of double reduction steam turbines are first charged can be eliminated by using Calol OC Turbine Oil 19. It will also give turbine and gears full protection throughout their lives.

Calol OC Turbine Oil 19 is a compounded oil, made from selected crudes. It contains a highly effective rust inhibitor which protects against both fresh and salt water. In official tests, steel strips immersed in mixtures of Calol OC Turbine Oil 19, fresh water and synthetic sea water showed no sign of rusting after 48 hours. Calol OC Turbine Oil 19 also contains an efficient oxidation inhibitor.

The high film strength of Calol OC Turbine Oil 19 provides a wear-reducing cushion that carries the heavy weight imposed on turbine bearings. Minimum wear prevents rotor misalignment trouble. Calol OC Turbine Oil 19 is non-corrosive and separates rapidly from water with little sludge formation.


SPREADS EVENLY OVER BEARING AND GEAR SURFACES, LUBRICATES, RESISTS AND DISPERSES HEAT
WITHSTANDS GREAT OPERATING LOADS
CORROSION INHIBITOR RESISTS RUSTING IN PRESENCE OF MOISTURE, WHETHER SALT OR FRESH
PARTICULARLY VALUABLE IN PREVENTING RUSTING IN NEW INSTALLATIONS
OIL FROM CIRCULATING PUMP


MINIMIZE DANGER OF BRITTLENESS, DISTORTION OR CRACKS
TO PUMP-CIRCULATED OIL COOLING SYSTEM
CONTAIN NO FATTY MATERIALS, FREE FROM DISAGREEABLE ODORS
MAY BE USED IN CONNECTION WITH SODIUM CYANIDE OR SALT WITHOUT ILL EFFECTS ON OILS
WILL NOT FOAM EXCESSIVELY AT EFFICIENT QUENCHING TEMPERATURES
HAVE GREAT STABILITY, MINIMIZING OXIDATION AND FORMATION OF DEPOSITS

Stable oils produce uniform hardness in steel

Because they retain their original viscosities in continued use, Calol Quenching Oils maintain a constant quenching speed and produce uniform hardness in steels. They have a high resistance to oxidation and contain no fatty oils to produce disagreeable vapors.

Calol Alloy Quenching Oil consistently and quickly produces higher hardness in alloy steels. Its unusual cooling power is based on what is believed a new principle. Unlike water, it eliminates the chance of brittleness, distortion or cracks.

Calol Quenching Oil is recommended for high-carbon steels. Made from selected mineral oils covering a wide boiling range, it provides the moderate cooling-rate desirable for these steels.

For suggestions on the use of Calol Quenching Oils, information about machining various metals and the lubricants required, write for the free booklet: "Calol Cutting Fluids."

For additional information and the name of your nearest Distributor, write Standard of California, 225 Bush Street, San Francisco 20, Calif., or The California Oil Company, 30 Rockefeller Plaza, New York 20, N. Y.

FOR EVERY JOB A **STANDARD OF CALIFORNIA** TEST-PROVED PRODUCT

contracted to Gunderson Bros., Portland, Ore.) The other two by United Concrete Pipe Co., Long Beach, Calif. The four trawlers will cost about $1,000,000 and will be powered by 600 hp. Enterprise Diesel engines, with 77 hp. Diesel auxiliaries turning 50 kw. generators.

Falconer Marine Industries, Ltd. is supplying J. H. Todd & Sons, Victoria, a new 57-ft. combination fishing boat, powered with a 75 hp. Caterpillar Diesel, with a 10-knot speed and carrying capacity of 45,000 lbs. of iced fish.

The new 65 ft. cutter, *Spirit*, now being built for Harold A. Jones, Vancouver, by the Vancouver Shipyards, Ltd., naval architect Edwin Monk, Seattle, will be powered with an 87 hp. Buda Diesel, to give a 10-knots speed. Auxiliaries will be a 5-hp. Fairbanks-Morse Diesel, directly connected to a 3-kw., 110 volt generator.

The 149 ft. wood tuna clipper, *Pan American*, Martinolich-built, now long range tuna fishing for Sun Harbor Packing Co., San Diego, will carry an amphibian plane for scouting schools of tuna in far-southern waters. The *Pan American* is main-powered by a 1,200 hp. 6-cyl., supercharged, Enterprise Diesel. Auxiliary power from two 300 hp., 6-cyl. Enterprises, driving 200 kw. Westinghouse generators.

Built at the Hillstrom Shipbuilding Company's plant, North Bend, for J. R. Hillstrom, the *Cygnet*, a 64 ft. towboat and salvage vessel is powered with twin General Motors 320 hp. Diesel engines working a single shaft with a 5-to-1 reduction and reverse gear, swinging a 56 in. x 42 in. propeller.

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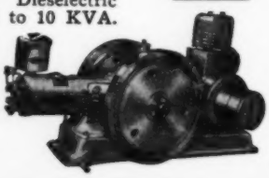
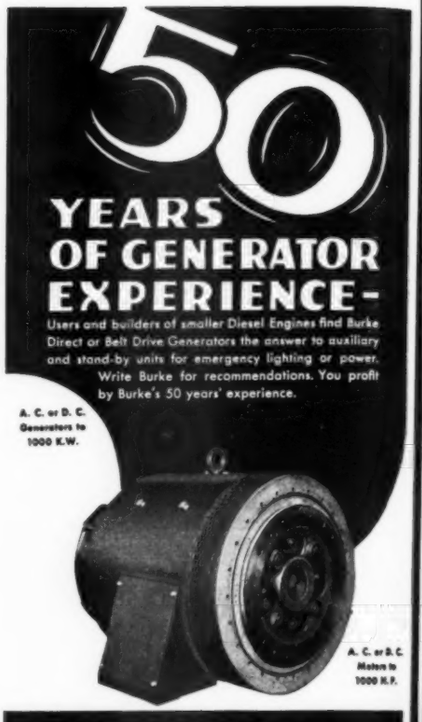


WITTE ENGINE WORKS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Please send full information outlining your sales experience and the area you would expect to serve. Sales Manager will arrange for interview in your city. Box 158 DIESEL PROGRESS, 2 West 45th St., New York, New York.

Manuel Medina of San Diego is having a 48 ft. high-speed Albacore boat of unusual design built for him by Nunes Bros., Sausalito, Calif. A 14 knot speed will be obtained from the use of an 8-cyl. 230 hp. Superior Diesel engine.

One of the first war craft conversion jobs utilizes a 50 ft. motor launch with a 55 ft. seiner, the end product. Plans by William Garden, Seattle. It will be powered by a 110 hp. Caterpillar marine Diesel engine.

Evans Engine & Equipment Co., distributors for General Motors Diesel engines and related lines of industrial and marine equipment, have new headquarters planned to be located on Seattle's Lake Union. The building is designed specifically for warehousing, sale, installation and servicing of Diesel equipment.

With a Caterpillar 115 hp. Diesel marine engine purchased from Thomas A. Short Co., San Francisco, Healy & Harrison Construction Co., Richmond and San Francisco are repowering one of their tugs. Accessories include a Twin Disc front power take-off, gas starting engine, Watrous rotary pump, Burgess snubber, Pitchometer propeller, Clark Cooper air horn, Nugent fuel oil filter.

The motorship *Biak* is the second vessel to be completed by the Albina Engine & Machine Wks., Portland, Ore., on a contract for 20 coastal cargo vessels for The Netherlands East Indies Government. The *Biak* is powered with an Enterprise Diesel engine, rated at 300-400 hp., giving a service speed of 8.5 knots. These vessels are 180 ft. 7 in. long, 29 ft. beam, 10 ft. 6 in. deep.

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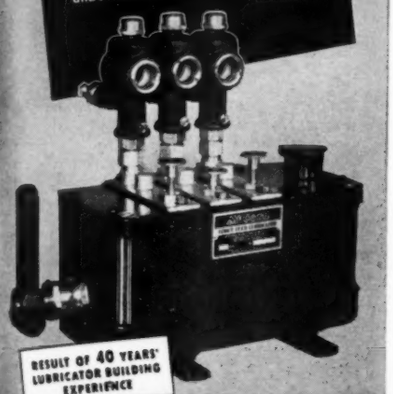

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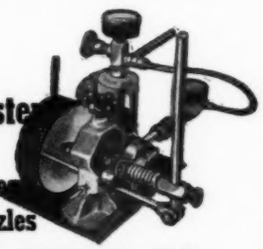

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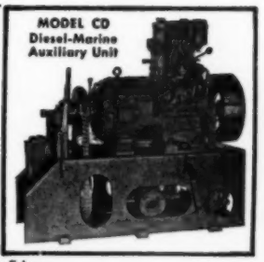

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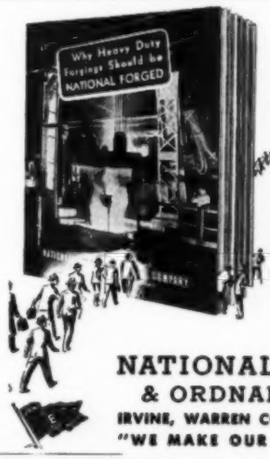

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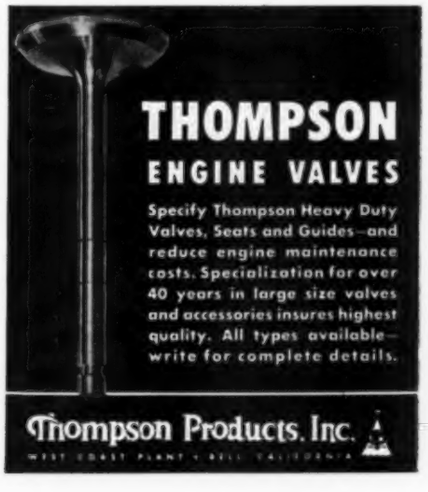

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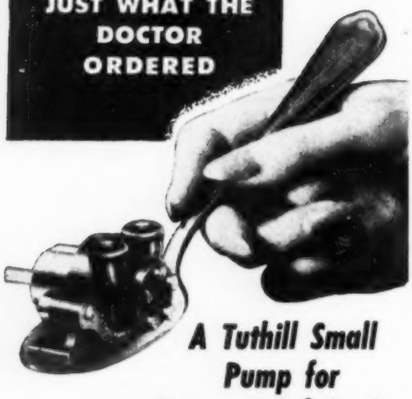

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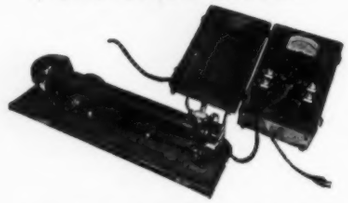

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The biggest tuna trip yet made landed 444.75 tons of straight Yellowfin for the *Espirito Santo,* a new 140 ft. steel tuna clipper, of San Diego, Capt. Joe Alves. It is powered by a 560 hp., 6-cyl., Union Diesel; the auxiliaries are three 115 hp. Caterpillar Diesels connected to 75 kw. generators.

The 96 ft. purse seiner *Titanic* built by Martinolich Shipbuilding Co., San Francisco, owned by Nick Mosich, San Pedro, is driven by a 400 hp., turbocharged Enterprise Diesel. A Caterpillar and a Buda Diesel provide auxiliary power.

The tuna clipper, *St. Mary,* Capt. Louis Massa, San Diego, powered by a 260 hp., 6-cyl., 600 rpm., Superior Diesel, is having the second Superior auxiliary Diesel installed, an 85 hp., 6-cylinder unit direct connected to a 60 kw. Fairbanks-Morse generator.

R. N. Petersen, Marine View Boat Co., Tacoma, has a 65 ft. halibut boat under construction

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for Andy Andersen, Seattle. It will be powered with a 120 hp. Washington Diesel. Mr. Petersen has orders for five more boats.

The *New St. Joseph*, purse seiner, 77 ft. 9 in. long, and powered with a 200 hp. Enterprise Diesel engine, has just been returned by the Navy to her former owners, and by them sold to A. Paladini, Inc. to be re-named *Achille Paladini*.

Ten production-line trawlers lined up under one roof, are under construction at Tacoma Boatbuilding Co. Length 45 ft. with 13 ft. beam. Power will be 65 hp. Caterpillar Diesels for some, 110 hp. Cummins Diesels for the rest.

The *Shirley Lee*, drag net and tuna boat, built by Astoria Marine Construction Co., for Jack McMillan and Geo. Bernhard is powered by a 175 hp. Cummins Diesel engine. It also has Exide batteries. The 16 ft. x 18 ft. fishold has a capacity of 125,000 lbs. and a Worthington refrigerating system.

Moore Equipment Co., Stockton, Calif., Northern California distributors General Motors Diesels engines, Ingersoll-Rand air tools, and other products, is establishing Bay-area distributing headquarters at Oakland, with a $250,000 investment in the plant.

At Aberdeen the *Broadway*, a 65 ft. trawler owned by Scotty Linscott, is being re-powered with a Buda Diesel of 171 hp. at 900 rpm.

The *Triunfo*, second of five sister tuna clippers, for the Southern California tuna fleet, is a tremendous vessel, capable of cruising 8,000 miles. Propulsion by an 840 hp., 6 cylinder Union super-charged Diesel. Auxiliaries are two 200 hp., 6-cyl. Union Diesels, connected to 125 kw. G.E. generators. Stand-by power is a 75 hp., 6 cylinder Caterpillar Diesel and 35 kw. G.E. generator.

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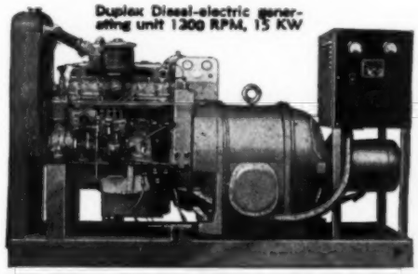

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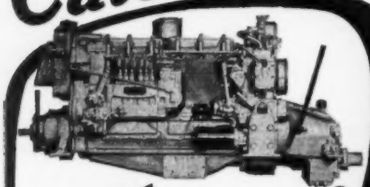

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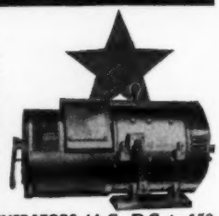

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